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THE ROLE OF SELECTED PERSONALITY CHARACTERISTICS IN THE

PREDICTION OF PSYCHIATRIC REHOSPITALIZATION:

DEINSTITUTIONALIZATION RE-VISITED

by

Jean Laura Toth

M.A., Simon Fraser University, 1986

B.Sc., University of Alberta, 1983

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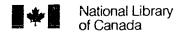THE REQUIREMENTS FOR THE DEGREE OF

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Prediction of Psychiatric Rehospitalization: Deinstitutionalization

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ABSTRACT

The present study is designed to contribute to an understanding

of personality as a predictor of rehospitalization status.

Ninety-four psychiatric patients were randomly assigned to either

standard community aftercare or assertive outreach treatment

conditions, and were administered a battery of three self-report

personality questionnaires: the Life Orientation Test, the Locus

of Control of Behavior Scale, and the Interpersonal Dependency

Inventory, measuring optimism, locus of control, and

interpersonal dependency respectively. Rehospitalization data

were collected over a follow-up period of one year from study

intake date. Using regression analyses, up to 27% of the

variance in rehospitalization status was accounted for.

Variables most important in the prediction of rehospitalization

were hospitalization history, education, mental health centre,

and diagnosis. One component of interpersonal dependency was

also a useful predictor, but of secondary import. Results are

discussed with respect to past research on predictors of

rehospitalization and the utility of personality as an additional

index of risk for hospital re-admission.

DEDICATION

To Mom

With Love

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First and foremost, I must thank my parents whose generous and untiring support has enabled me to pursue my studies and complete what so often has seemed an insurmountable task. I also wish to express my appreciation to all my committee members, especially Doctors Coles and Koopman, for their support and guidance throughout this undertaking. Thanks are extended also to the assertive outreach staff under the direction of Dr. John Higenbottam, who not only assisted me in data collection, but allowed me to partake in their already complex and extensive research program. To all the psychiatric patients who participated in the research, I thank you and hope that efforts such as the present study will help to improve your lives. Lastly, to my family, who matters above all else, I thank them for their understanding, patience, love, and support, without which the completion of such a project would not have been possible.

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PART A

INTRODUCTION

CHAPTER I

DEINSTITUTIONALIZATION AND THE MEASUREMENT OF SUCCESSFUL TREATMENT

Following three major revolutions (Hobbs, 1964), psychiatry has evolved to the point that in some sense, the treatment of the mentally ill has come full-circle. From wandering the streets of their local communities, through being housed in jails and monasteries, removed to out-of-town asylums and hospitals, and now back to the streets of their local communities via local hospitals and community mental health centres, the mentally ill continue to be shuffled through treatment facilities as psychiatry and society at large struggle to find more effective and appropriate methods of managing this rather large segment of the population (Lamb, 1984).

This dissertation is an attempt to contribute to the search for a more efficient allocation of resources in the management of psychiatric patients in the era of deinstitutionalization. To this end, the history of psychiatric treatment and the factors contributing to the deinstitutionalization movement will be reviewed, culminating in an examination of the literature evaluating the outcome of this process. Particular emphasis will be given to rehospitalization statistics, and the classes of variables potentially relevant to ensuring that discharged patients remain out of hospital.

The Evolution of Psychiatry

Demonology. From pre-Christian times until the early 19th century, the predominant belief was in the supernatural, in particular that mental abnormalities were caused by the invasion of one's body by demons. Those so possessed were housed in monasteries, poorhouses, and prisons, largely for the protection of society. Treatment consisted of religious exorcisms and harsh punishments designed to force the evil spirits from the body, and included trephination or drilling a hole in the afflicted individual's skull, blood letting, and mechanical restraints. It's apogee was reached in the late 1400s, with the publication of the infamous Malleus Maleficarum (The Witches' Hammer). Written by two German Dominican monks, this book listed clinical symptoms and recommended interview through torture techniques, and death by strangulation, beheading, or burning at the stake, as the treatments of choice. These witch hunts and executions continued into the 1700's (Coles, 1982).

The biological revolution. By the early years of the 19th century, major advances had been made in the fields of medicine and the physical sciences, and modern experimental science had emerged. Following the establishment of the "germ theory of disease" by Louis Pasteur in the late 1800's, the relationship between the syphillis spirochete and the disease General Paresis of the Insane was demonstrated. This was the first time that a biological disease process had been linked to mental illness.

As a result of these discoveries, the "first mental health revolution" occurred and mental abnormalities began to be viewed as illnesses, with biological bases, and therefore potentially treatable through medical interventions. Benjamin Rush, considered the father of American Psychiatry, initiated a systematic study and classification of the mentally ill. He believed their disorders were caused by inflammation of the brain, and recommended blood letting as the treatment. Large scale psychiatric facilities were established, not only for use as treatment centres for the curable, but also as places of "asylum" where patients could be protected from society, and society protected from them (Bigelow, Cutler, Moore, McComb, & Leung, 1988; Pepper, Kirshner, & Ryglewicz, 1981). However, the few public hospitals in existence at the time catered only to those who could pay. Available treatments expanded to include psychosurgery, insulin coma, and electroshock therapy, with early reports of high cure rates for those patients ill for less than one year. The poor however, remained in jails and almshouses, and continued to be treated with primitive and brutal techniques (Gralnick, 1987).

The psychological revolution. The "second revolution" in psychiatry, from biology to psychology, is associated with the work of Sigmund Freud in the early 1900's. Though psychological theories regarding the origins of mental illness predominated at this time, in the area of therapy the majority of hospitalized patients were receiving biological treatments. In fact, biological interventions began to receive even more support by

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the mid 1900's with the dopamine hypothesis of schizophrenia, and the apparent link between hypo-adrenergic system functioning and depression. At present, biological therapies continue to represent the central treatment in the field of psychiatry, so much so that some would argue for a second biological revolution having occurred during the 1970's and 1980's.

The emergent conceptions of mental illness in the early 1900's effected a humanitariam concensus that all mentally ill persons were entitled to treatment, including the poor and more chronically afflicted individuals, and that the provision of such treatment was the responsibility of the state. Consequently, large scale state psychiatric "hospitals" arose, their name symbolizing a curative intent for the "disease" of mental illness.

This increased humanitarianism, and perhaps a decreasing tolerance for deviance in society, together with medicine's failure to successfully treat the more chronically ill, had the effect of ever increasing numbers of long-stay psychiatric patients (Gralnick, 1987). As a result, the population of hospitalized mentally ill exploded. By the early 1950s, the number of hospitalized mentally ill people reached a peak in the United States of over 500,000 (Bigelow et al., 1988; Gralnick, 1987; Kruzich & Berg, 1985; Pepper et al., 1981, Talbott, 1979). At the Provincial Mental Hospital in British Columbia, the number of in-patients peaked at 4,000 in 1956 (Davies, 1988).

The socio-cultural revolution. The "third revolution" in the conception of mental illness took hold in the 1950's and was

to dominate psychiatric practise through to the 1970s. "Psychiatry was dominated by nondirective, client-centered therapies that were more concerned with understanding than knowledge, and by various forms of group, milieu and community therapies" (Coles, 1982, p. 291). Together with prevailing anti-establishment sentiments, this new socio-cultural approach rejected the "medical model", and instead, viewed mental illness as behavioral aberrations symptomatic of social disorder. Proponents believed in prophylaxis, and that chronicity, if not mental illness itself, could be prevented by environmental manipulation, and community, rather than hospital care (Gralnick, 1987). The fruition of these ideals is evidenced in the most contemporary approach to treatment of the mentally ill, that being "psychosocial rehabilitation" (Anthony, Cohen, & Farkas, 1990). Coupled with biological interventions, this approach has become the "state of the art" in psychiatric treatment efforts.

The Community Mental Health Movement

Following directly from the newer socio-cultural ideas, treatment was no longer considered to be the exclusive domain of physicians, but could legitimately involve non-medically trained personel in the community. The birth of this "community mental health movement", based on a public health model, advocated the provision of a full range of resources to anyone needing them; the promotion of early detection and treatment; and the strengthening of resources in the community to facilitate primary prevention by creating environments that would prohibit the development of abnormal behaviors (cf. Coles, 1982; Plum, 1987).

Further, the treatment of people in their home community was essential if disruption of normal patterns of living were to be avoided.

These mental health principles favoring community care, and intrinsic to the community psychiatric movement, provided the initial impetus for change with respect to the de-institutionalization movement, an impetus that was reinforced by government concerns about the growing cost of health care. This movement however, was predicated on the naieve assumption that community mental health centres could effectively take over the functions of the hospital; an assumption that was to be a major downfall of the deinstitutionalization movement (Talbott, 1979).

The Rejection of Hospitalization

In addition to socio-cultural ideas advocating community care, further impetus for change came from growing concerns regarding the negative aspects of hospitalization as a prime mode of treatment. In "The Death of the Asylum", Talbott (1978) articulated the deplorable, degrading, and inhumane conditions of state psychiatric hospitals. Popular works at the time such as Deutsch's "Shame of the States", and the movie version of Mary Jane Ward's 1946 novel "The Snake Pit", echoed these same sentiments. Discontent with the quality of care reflected observations of neglect, mismanagement, and unrealistically high expectations for success, with large costs to human dignity, liberty, and respect for the individual (Bigelow et al., 1988; Gralnick, 1987; Plum, 1987).

Clinical evidence suggesting that extended hospitalization caused chronicity by inducing "institutional neurosis" or the "social breakdown syndrome" also became publicized (cf. Barton, 1959; Vail, 1966). This institutional syndrome was characterized by poor social and psychological functioning, apathy, negativism, docility, lack of initiative, loss of interest, apparent inability to plan for the future, and lack of individuality mingled with episodic outbursts (Coles, 1982; Gralnick, 1987; Pepper et al., 1981; Test & Stein, 1978), and was seen to impair patients' abilities to function in the community after release. Consistent with the community mental health movement, these findings argued for treatment alternatives outside the hospital environs, and that hospitalization should be restricted to acute episodes of illness (Kennedy, 1990).

Together with these humanitarian concerns, the tremendous economic costs associated with large, state-financed institutions were realized, and became an issue with political implications (Gralnick, 1987; Plum, 1987). One Canadian study for example, noted that the average cost per patient treatment day was more than ten times greater for in-hospital care as compared to home-based treatment (Coates, Kendall, MaCurdy, & Goodacre, 1976). Anthony and Blanch (1989) reported that the average cost for in-hospital treatment in 1989 was five hundred dollars per patient day.

Legal concerns in line with the community mental health movement, involving the protection of civil rights also came to the forefront, and took precedence over the patient's right to

treatment. There was an assumption that patients' would rather live in the community, and such was also considered to be in their best interests (Kinard, 1981).

This civil libertarian movement argued for respect for individuality, requiring that "every individual be treated as unique and equal to every other, and that special justification be required for interference with any individual's purposes, privacy, or behavior" (Plum, 1987, p. 509). These legal concerns are summarized in the principle of the "least-restrictive alternative": "when government has a legitimate communal interest to serve by regulating human conduct it should use methods that curtail individual freedom to no greater extent than is essential for securing that interest" (Chambers, 1978, p. 25).

Together these social, clinical, economic, political, and legal factors, resulted in the deinstitutionalization movement that began to take hold in the 1950s, a movement that was facilitated when antipsychotic drugs came into widespread use following the discovery of the major tranquilizers reserpine and chlorpromazine in 1952 (Coles, 1982). The extremely beneficial effects of these "miracle drugs" encouraged beliefs in the feasability of community treatment, and the exodus of mental patients from psychiatric institutions gained momentum (Gralnick, 1987).

"Deinstitutionalization" Officially Adopted

Defined in general terms, "deinstitutionalization refers to the movement of individuals who cannot function independently and

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need continuing mental health care, from large, long-term, public institutions to smaller, more flexible, and less restrictive settings in the community" (Plum, 1987, p. 508). In practical terms, it represents the discharge of a large number of patients from psychiatric inpatient facilities to their local communities (Brown, Carstairs, & Topping, 1958).

This movement was officially adopted as public policy in the 1960s. Evidenced by documents such as the "Report of the Joint Commission of Mental Illness and Health" (United States, 1961) and the "Community Mental Health Centres Act" (United States, 1963), it "signaled and fostered a trend toward comprehensive community-based care" (Erickson, 1975, p. 519), and activated attempts to phase-out chronic mental hospitals in the interest of preventing or aborting the institutionalization of patients residing there (cf. Geller, 1982).

Over the last 20 to 30 years, the population of psychiatric in-patients has steadily declined to present levels of about 120,000 in the United States (Bigelow et al., 1988; Kruzich & Berg, 1985; Pepper et al., 1981). At Riverview Hospital in British Columbia, the in-patient population levelled off at about 1,000 in the mid 1980s (David Davies, personal communication, April 30, 1991). This decline represents approximately a 70 - 75% decrease in the number of patients housed in psychiatric hospitals. In addition to the discharge of large numbers of patients, it has been achieved by decreasing numbers of psychiatric admissions together with decreases in the duration of hospital stay (Talbott, 1979). While prior to the implementation

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of de-institutionalization policies it was not uncommon for patients to remain in hospital for several years on any given admission, and in some cases for life, by the 1980s the average length of hospital stay was reduced to four weeks or less (Engelhardt, Rosen, Feldman, Engelhardt, & Cohen, 1982; Shern, Wilson, Ellis, Bartsch, & Coen, 1986).

The Critique of Deinstitutionalization

The deinstitutionalization movement came under scrutiny when untoward and unanticipated negative consequences began to be observed. Researchers set-out to evaluate these outcomes and addressed the question: Is limited hospitalization an effective means of treating the mentally ill?

By this time there already existed a voluminous body of literature evaluating the effectiveness of traditional psychotherapy (cf. Smith & Glass, 1977), which aside from demonstrating a significant improvement in treated patients as compared with controls (Smith & Glass, 1977), also resulted in the recognition that treatment effectiveness in the field of mental health is extraordinarily difficult to measure and evaluate.

Defining the "Success" of Psychiatric Treatments

The criteria of illness and health. A major methodological issue regarding efforts at quantifying treatment outcome is the operational definition of "success". Generally speaking, a basic requirement for success involves a diminution of the "illness", which can be defined on the basis of objective psychological symptoms, social maladjustment, failure of positive striving,

and/or subjective distress (Coles, 1982). In addition, investigation of the success of a treatment must also take into consideration the costs and adverse effects associated with that treatment.

These factors are summarized by Wolpe (1964 as cited in Coles, 1982, p. 390) in a comprehensive conceptual model of outcome criteria to be employed in the evaluation of psychiatric therapies. These criteria are: 1) Primary criteria - Is the sufferring alleviated? If so, how quickly? How completely? How enduringly? And how free is the treatment from adverse side effects?; and 2) Secondary critera - What is the financial cost to the patient in terms of fees and lost income? What is the social cost to the patient in terms of stigma and disrupted relationships? What is the cost to the therapist in terms of time, effort, and training? What are the social and financial costs to society at large?

Although not often explicitly recognized, "values are [also] inherant in the conceptions of mental health and illness as well as in clinical judgements based upon these models" (Strupp, 1981, p. 47). Hence, different outcomes measures (as above), often and necessarily are taken from and reflect different vantage points (e.g., physician, patient, peers, ...), and are only modestly correlated, if at all (Coles, 1982; Strupp, 1981).

Optimally then, treatment outcome research involves a complicated cost-benefit analysis with a focus on all relevant dependent variables. Consideration of these factors necessitates a multi-variate definition of success.

Moderator variables. In addition to defining the "disorder" and the criteria for "success", treatment outcome research also must acknowledge other factors that have the potential to moderate, or influence treatment success differentially. These include patient characteristics such as age, sex, cultural and personal background, socio-economic status, in addition to type and duration of disorder; the multi-variate specifics of the treatment employed; and therapist characteristics such as experience, attitude, and personality (Coles, 1982). Furthermore, in addition to moderating "success", these variables may interact with each other.

Hence, it is clearly recognized that treatment outcome criteria are multivariate in nature, as are the independent variables of patient characteristics, therapist characteristics, and treatment characteristics. Though case study and other single-subject research designs may legitimately be used to examine treatment effectiveness, large scale comprehensive studies are generally required to address the multitude of variables involved. However, short of resources to conduct such elaborate studies, researchers are often able to investigate only a limited subset of the factors potentially relevant to treatment outcomes. If not the ideal, then conclusions therefore must be based on internally valid studies, with generalizability limited to those specific characteristics studied.

The Failure of Deinstitutionalization

In examining the outcome of deinstitutionalization, researchers have tended to focus on the primary criteria of

success: the alleviation of illness and the presence of adverse effects. With respect to these considerations, the movement of patients from hospital to community-based treatment has generally been regarded as a "failure" of mass proportion.

Though it was conceived with the best of intentions, and the underlying philosophy guiding limited hospitalization considered to be admirable, the deinstitutionalization movement was soon to be denounced as a social blunder (Gralnick, 1987) at best, and at worst, a disaster and a public disgrace (Plum, 1987; Salem, 1984; Talbott, 1979). Its failure was blamed on factors such as poor continuity of care, inadequate rehabilitation facilities, legislative and judicial contradictions, patient non-compliance with medications, patient ambivalence, and the cyclical nature of mental illness (Bachrach, 1978; Bachrach, 1979; Bachrach, 1984; Geller, 1982; Gralnick, 1987; Lamb, 1984; Talbott, 1979; Talbott, 1991).

The community mental health movement in general was also criticized on other, more fundamental grounds. The treatment of patients in their home community where the disorder developed initially was challenged as perhaps perpetuating abnormal contacts (Coles, 1982). The "neurosis" originally thought to be induced by hospitalization itself was observed in patients who had spent little or no time in hospital (Pepper et al., 1981), suggesting that these symptoms were perhaps inherent in the disease process itself, and/or that inhospital studies may have reflected a selective loss of motivated patients (Erickson,

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1975). If these conclusions were valid, then the entire premise of the deinstitutionalization movement was to be questioned.

Adverse effects. Adverse effects of deinstitutionalization include exploitation, social maladjustment, and the failure of positive striving.

The suffering of many discharged patients and their often semi-derelict status in the community has been the subject of much consternation (Geller, 1982; Kennedy, 1990). The mentally ill are often exploited, physically abused, and exposed to drug abuse, criminal influences, homelessness, hunger, and general victimization in the community at large (Bigelow et al., 1988; Lamb, 1984; Plum, 1987). Some in fact prefer rehospitalization as opposed to trying to subsist indefinitely as an out-patient on a small social security allowance (Geller, 1982). Among non-recidivists over a twelve month period, as many as 25% report a desire to return to hospital on at least one occasion since their release (Kinard, 1981).

Pepper et al. (1981) also report an "appalling" rate of death by suicide (over four percent) in one year from a group of newly discharged young chronic psychiatric patients.

Lack of adequate community resources. In addition to adverse effects, the prevailing problems common to all patients such as "their acute vulnerability to stress, their difficulty in making stable and supportive relationships, their inability to get and keep something good in their lives, and their repeated failures of judgment" (Pepper et al., 1981. p. 464) demanded extensive but unavailable support systems in the community, if

hospitalization was to be successfully avoided (Moran, Freedman &
Sharfsteen, 1984). In fact, as many as 60% of rehospitalizations
to a psychiatric facility are due to medical or social reasons
(such as loss of social supports) and not for psychiatric
indications (Harris, Bergman, & Bachrach, 1986). Yet, it was
not until the late 1970s that the needs of the
deinstitutionalized mentally ill for extensive community support
systems were formally recognized (Plum, 1987; and see Gralnick,
1987 for a review of the progression of legal statutes relevant
to funding).

A decade ago it was recognized that the development of a
system of community mental health centres to support
deinstitutionalized patients seriously lagged behind the phaseout
of large psychiatric hospitals (Talbott, 1979). The outcomes for
chronically ill mental hospital patients discharged to the
community without the benefit of adequate support services were
likely to be worse that those expected with continued
hospitalization (Braun et al., 1981). But as recently as five
years ago, the cost-benefit ratio of deinstitutionalization, in
either economic or human terms, was still not known (Plum, 1987).

Although initial evaluations of the problem identified an
inadequate network of mental health centres, more recently,
fundamental dificulties in using mental health centres as the
main locus of treatment have been realized. Specifically, mental
health centres alone are insufficient as they are clinic-based,
and rely on the initiative of patients to seek assistance. As a
result, mental health centres have typicaly failed to deliver

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service to the most severely ill. Talbott (1979) describes this "syndrome" resulting from a lack of follow-up and aftercare, as "falling between the cracks".

The Measurement of Successful Treatment

Regarding the primary criterion of alleviation of suffering, a variety of operational definitions of deinstitutionalization outcome have been used including hospital adjustment, duration of hospitalization, post-hospital employment, and recidivism (re-admission to hospital), among others. Studies in this area are prolific, and to date, several comprehensive reviews of rehabilitation outcome studies using these variables have been published (Anthony, Buell, Sharratt, & Altoff, 1972; Anthony, Cohen, & Vitalo, 1978; Buell & Anthony, 1973; Erickson, 1975; Rosenblatt & Mayer, 1974). These criteria address most directly the primary goals of deinstitutionalization and the community mental health movement, that being the successful relocation and re-integration of the mentally ill into the community (cf. Rosenblatt & Mayer, 1974).

In-Hospital Measures

Of these outcome criteria, adjustment measures taken in the hospital setting including manifest symptomatology and social behaviors have not been found to be useful as they do not reliably correlate with later, post-hospital adjustment, or functioning in the community (Anthony et al., 1972; Erickson, 1975).

Length of Hospital Stay

Length of hospital stay has also been used as a means of evaluating hospital productivity (cf. Erickson, 1975). It measures success in terms of speed of treatment rather than optimal treatment, and hence may have little bearing on the well-being of the patient. This statistic in large part reflects changes in public policy and attitudes over time, administrative and discharge policies of the institution in question, other bureaucratic bottlenecks, and the needs of physician and family as much as those of the patient (Erickson, 1975; Kokes, Strauss, & Klorman, 1977). As with post-hospital employment and hospital adjustment, length of hospital stay does not correlate well with other outcome criteria.

Post-hospital Employment

Post-hospital employment is also unrelated to remaining in the community, and there are no differences in post-hospital employment between recidivists and non-recidivists (Buell & Anthony, 1976). In general, employment rates following hospitalization are very low (less than 30%) (Erickson, 1975), and are likely highly confounded with toleration for deviance in the community at large, and therefore may only partially reflect employability and/or adjustment abilities of the individual.

Rehospitalization or Recidivism

The use of physical location as a measure of the durability of treatment success is widespread, with success defined as "in the community" and failure defined as "in hospital". Rehospitalization or recidivism, the measure used most

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frequently, is the simplest criterion of outcome (Buell &
Anthony, 1976). Recidivism is operationally defined as the
percentage of discharged psychiatric patients who are
subsequently rehospitalized, or alternatively, the time to
rehospitalization in months (Blumenthal, Kreisman, & O'Connor,
1982). It has been suggested that recidivism statistics have
become the "indicator *par excellence*" of hospital effectiveness,
largely due to methodological assets such as ease of collection,
high reliability, ease of quantification and comparability across
studies (Rosenblatt & Mayer, 1974, p. 698; see also Anthony et
al., 1978).

Although this measure has been criticized on grounds that it
is confounded with several other variables, Talbott (1974) found
that a vast majority of re-admissions to one state mental
hospital were due to continuing symptom progression (often
psychosis or paranoia) and/or aggressive or assaultive behaviors
(including suicidal and homicidal gestures). Similarly, a survey
of the files of 31 discharged chronic psychiatric patients at a
general hospital, found that 29% of rehospitalizations were due
to psychotic symptoms, 10% were related to substance abuse, and
19% were related to medical illness (Harris et al., 1986).

Furthermore, it is also argued that "rehospitalization
represents one of the most serious and clear-cut manifestations
of the breakdown in social arrangements which are necessary for
people to live together in toleration, if not harmony" (Fontana &
Dowds, 1975b, p. 231). Hence, this criteria implicitly
recognizes the multi-variate nature of the problem, as it

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indirectly reflects many other potent and naturalistic factors. Rehospitalization is thought to reflect the operation of a conglomerate of patient and situation characteristics that interact and contribute to the overall effect of ultimate "failure" of hospital treatment success.

Together with the realization of the aforementioned "adverse effects", the "failure" of deinstitutionalization was largely evidenced on the basis of this readmission criterion indicating that achievement of its primary goal was not being sustained (cf. Rosenblatt & Mayer, 1974). It has been suggested that what has resulted is "trans-institutionalization" as opposed to the de-institutionalization intended (Kruzich & Berg, 1985; Talbott, 1979; Talbott, 1991). Such observations are predicated on the finding that increased discharges have been paralleled by dramatic increases in re-admission rates over time.

This "revolving door" phenomenon (Geller, 1982) as it became known, is evidenced in the fact that in 1950, 25% of all admissions were represented by previously hospitalized individuals, whereas by the early 1970s, re-hospitalization represented 60 to 65% of all admissions (Engelhardt et al., 1982; Rosenblatt & Mayer, 1974; Talbot, 1974; Willer & Miller, 1977).

The criterion of rehospitalization as a measure of the success of the deinstitutionalization movement has been the subject of intensive study. On the basis of the aforementioned arguments, rehospitalization statistics have been chosen to function as the outcome measure in the empirical investigation to

follow. The remainder of the literature review will therefore be devoted to findings regarding this particular outcome variable.

Rehospitalization Rates Among Psychiatric Patients

Based on a substantial body of literature, a clear and consistent pattern has emerged: there is a continual increase in cumulative recidivism rates as time from discharge increases (Anthony et al., 1972; Engelhardt et al., 1982). Given the multitude of studies published on this topic (e.g., Rosenblatt & Mayer, 1974), the following review is intended only to be representative and not exhaustive.

Table 1 presents the findings of a number of studies and review articles with regard to rates of hospital re-admission. This sampling of published research illustrates the diversity of methodologies that have been employed over a period of the last 30 years with respect to length of follow-up period, and number and nature of subjects included for study. Yet, despite these variations in methodologies employed, there are consistent indicators that over discharge periods of six months to one year recidivism is 30-50%; for two years, 60-65%; and for three to five years, 65-75%. Only 25% of discharged psychiatric patients are able to stay in the community for five years or more.

The samples in these studies vary slightly, but schizophrenic diagnoses typically represent the majority of patients studied, with affective and other psychotic disorders representing a smaller, but significant portion of subjects. Subjects also tend to have a significant history of prior

hospitalizations and, therefore likely represent patients with
fairly severe illnesses.

Table 1: Rehospitalization Rates Among Psychiatric Patients

Follow-up Period	Recidivism (%)	Number of Subjects	Nature of Sample	Authors (see below)
3 months	15	1 study	review article	1
3 months	10-22	3 studies	review article	6
6 months	30-40	3 studies	review article	1
6 months	14-40	7 studies	review article	6
6 months	30	78	mixed diagnoses	2
6 months	33	505	mixed diagnoses	3
7 months	24	10,406	mixed diagnoses	4
9 months	29	104	mixed diagnoses-males	5
1 year	40-50	8 studies	review article	1
1 year	35-50	15 studies	review article	6
1 year	32	229	mixed diagnoses-males	7
1 year	22	646	schizophrenics	8
1 year	39	72	schizophrenics	9
1 year	42	78	schizophrenics	10
2 years	51-75	5 studies	review article	6
2 years	67	488	mixed diagnoses	3
2 years	33	36	mixed diagnoses	11
2 years	60	253	schizophrenics	12
3 years	65	1 studies	review article	1
3-5 years	65-75	7 studies	review article	6
5 years	65-75	3 studies	review article	1
5 years	50	646	schizophrenics	8
5-10 years	70-75	5 studies	review article	6
10 years	57	646	schizophrenics	8
15 years	59	646	schizophrenics	8

Authors:
1 Anthony, Buell, Sharratt, & Althoff, 1972
2 Buell & Anthony, 1973
3 Goering, Wasylenki, Lancee, & Freeman, 1984
4 Blumenthal, Kreisman, & O'Connor, 1982
5 Lorei, 1964
6 Anthony, Cohen, & Vitalio, 1978
7 Brown, Carstairs, & Topping, 1958
8 Engelhardt, Rosen, Feldman, Engelhardt, & Cohen, 1982
9 Gaebel & Pietzcker, 1985
10 Marks, Stauffacher, & Lyle, 1963
11 Lasky, Hover, Smith, Bostian, Duffendack, & Nord, 1959
12 MacMillan, Crow, Johnson, & Johnstone, 1986

The few divergent findings cited in Table 1 can largely be explained by differences in the nature of subjects chosen for study inclusion, particularly with respect to apparent severity of illness. Blumenthal et al. (1982) for example, reported only a 24% rate of recidivism at seven months, but included mostly patients with less than one year prior hospitalization history, effectively excluding those with more chronic and perhaps severe illnesses. Their study is however admirable, due to the extremely large sample studied ($\underline{N}$=10,406).

Similarly, Engelhardt et al. (1982) who reported only a 22% recidivism rate at one year follow-up, studied out-patients seeking treatment, 21% of whom had never been hospitalized, and 30% who had been hospitalized less than 90 days. In addition to a likely less severely ill sample, these patients may have been more highly motivated to comply with treatment and remain out of hospital, as all subjects were actively seeking treatment. The Engelhardt study is important however, as the follow-up period of 15 years appears to be unique.

Lasky et al. (1959) also reported a relatively low rate of recidivism at two years follow-up (33%), but their sample was small and consisted of only 20% schizophrenics, with other diagnoses including "neurotic" (40%), "psychophysiologic reactions" (25%), and "character disorders" (15%). Coupled with a relatively small sample size of 36, their patients were generally not as severely ill as those typically included for study.

It is therefore readily observable that for the vast majority of psychiatric patients for whom deinstitutionalization would be a pressing concern, that is those with more severe illnesses, the likelihood of future rehospitalization over time is very high.

In addition to sample differences, another variation in research design pertains to the length of time between initial or discharge, and follow-up measures. Some researchers use the time when behavior is restored to premorbid levels as their dependent variable and criterion for successful treatment. But this may be unrealistic, especially in the case of chronic patients whose adjustment may be only marginal at best (Erickson, 1975). Perhaps a more informative strategy would be to measure outcome when the majority of changes likely to occur in the future have already occurred, that is, by identifying the point at which stability for a number of dependent variables is reached (Erickson, 1975).

In line with this rationale, Blumenthal et al., (1982) found that over a seven month follow-up period, the time of greatest risk for relapse was during the first 30 days post-discharge, with the probability of relapse being 1.5 times greater during this period as compared with any other time. The sample in this study was of mixed diagnoses, and included many patients who had a relatively minor prior hospitalization history, suggesting that the course of disease and response to treatment in its most earliest stages may have a significant bearing on future severity as indicated by need for subsequent hospitalization(s).

Fontana and Dowds (1975a) studied psychotic and non-psychotic males, and found that at six months post-discharge improvements in symptomatology were retained, social contacts were largely re-established, and the "honeymoon effect" on substance abuse was over and levels of ingestion were back to more stable admission levels. Employment however, while showing some recovery towards admission levels, had not reached pre-admission levels even by six months post-discharge. With respect to the latter, Erickson (1975) notes a consensus in the literature that employment following hospitalization is an area of grave concern, as only about 20 to 30% of discharged patients work full-time, regardless of the type of intervention utilized (cf. Anthony et al., 1972).

Despite the findings of Blumenthal et al., (1982), follow-up periods of much less than six months may not adequately represent the outcome for the majority of patients, as recidivism rates accelerate dramatically during the entire first-year post-discharge (see Table 1 above). In fact, it has been found that of those patients destined for re-hospitalization over a six year period, the majority (58-74%) will relapse during the first year post-discharge (Brown et al., 1958).

Looking at the recidivism rates reported in Table 1, this disproportionately high number of readmissions during the first year post-discharge is readily apparent. For example, the number of readmissions during the first year post-discharge ranges between 30% and 50%, while these same statistics for two years post-discharge are between 60% and 65%. As these percentages

represent cumulative totals, the number of new recidivists during the second year post-discharge is actually only 10% to 35%. Following this same procedure, the number of new recidivists between years three and five post-discharge is only 0% to 15%.

In addition to suggesting that follow-up measures taken at one-year post-discharge reflect the fate for a large majority of ex-psychiatric patients, this data also may indicate that if a person is able to stay out of hospital for three to five years post-discharge, then the likelihood of their avoiding re-admission indefinitely is extremely high.

Similarly, of eventual schizophrenic recidivists over a 15 year follow-up period, 63% were re-hospitalized within the first two years post-discharge, 85% within the first 5 years post-discharge, and 90% by the end of the seventh year post-discharge. Others have found outcomes at two and five years to be highly correlated (Strauss & Carpenter, 1977).

On the basis of these reports it appears that an acceptable time for collection of follow-up data, with respect to representing more longer-term outcomes, is not less than one year. More optimally, follow-up periods of two or even up to five years post-discharge, may provide additional information relevant to eventual treatment outcomes. Practical constraints however, may not always afford researchers the opportunity for such extended follow-up periods, but nonetheless, it would appear necessary that measures be taken at least one year post-discharge, in order that findings reflect the course of a significant portion of the discharged population.

Summary

The evolution of psychiatry has shown three major revolutions in the conceptualization of mental illness: from religious models of demonic possession to medical models of biological malfunction, to psychological, and then to socio-cultural approaches reflecting concerns with social and environmental ills. In line with this evolution of thought, treatment strategies for psychiatric illness have also changed dramatically from earlier warehousing of social deviants in jails, almshouses, asylums, and more recently in hospitals, to the present where treatment in the community is the preferred alternative. Contemporary practise typically reflects an incorporation of biological interventions and extensive psychiatric social rehabilitation programs. In some ways, this represents evolution further to the three major revolutions, historically witnessed.

The move to "deinstitutionalize" psychiatric patients has been ongoing over the last 20 to 30 years, and although it is founded largely on humanitarian concerns, the de-institutionalization movement has largely been regarded to have been a failure. The "revolving door syndrome" or the repeated re-admission of large numbers of discharged psychiatric patients, has been identified as a major problem, particularly over the period of the first year post-discharge.

With re-admission statistics well-documented, researchers have now shifted their attention towards efforts aimed at remedying this problem of recidivism. One such line of research

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involves attempts to identify variables predictive of post-discharge community adjustment. It is this ongoing and developing literature that is the subject of the following chapter.

CHAPTER II

PREDICTORS OF REHOSPITALIZATION

De-institutionalization has been plagued with multiple problems, but many of these problems have been attributed to poor planning and a lack of re-distribution of financial resources to the community for rehabilitation and support programs (cf. Goering et al., 1984). Despite the difficulties, the prevailing view is still that long-term hospitalization is a less desirable state than treatment in the community. As such, the alarmingly high rates of re-admission have become the subject of intensive research efforts designed to identify variables that may be useful in predicting which individuals are most at risk for re-hospitalization. These variables go beyond the patient's psychiatric condition, and include the patient's family, availability of community services, citizens' tolerance, and the hospital structure and personnel (Kruzich, 1985). But accurate identification of patients most at risk for relapse is still an essential first step if rehabilitative efforts are to ultimately be directed more efficiently and appropriately (Miller & Willer, 1976). Deinstitutionalization has thus become a selective programme, rather than a general one.

Knowledge gained from studies attempting to identify specific correlates or predictors of recidivism can be used to identify high risk patients, and to suggest more efficient interventions that might be successful in effecting more

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favorable outcomes, and thereby, in reducing rehospitalization rates.

As there is a large body of literature devoted to identifying predictors of hospital discharge outcome, the following is intended only to be a representative review, including the variables that typify research to date. In the section to follow, predictor variables relevant to re-hospitalization will be organized according to "time of collection", and are thus grouped as "pre-hospitalization", "in-hospital", and "post-discharge".

Pre-hospitalization Predictors

Much research activity has been directed toward the identification of pre-existing patient characteristics or historical activities that may have an influence on post-discharge outcomes. Such factors include demographic and personality characteristics, as well as social and employment history. With the exception of personality, this class of predictors has largely been found to hold little promise for indicating hospitalization course over time.

Demographic Characteristics

Age. There is a general concensus in the literature that age is not a significant predictor of future rehospitalization, a finding that generalizes across diagnostic groups and follow-up periods ranging from 6 months to two years (Buell & Anthony, 1973; 1976; Fontana & Dowds, 1975b; Lasky et al., 1959; Lorei & Gurel, 1973; MacMillan et al., 1986).

Sex. As with age, the studies sampled generally have found that sex is not a significant predictor of recidivism (Buell & Anthony, 1973; 1976; Byers & Cohen, 1979; MacMillan et al., 1986). One exception to this was reported by Thompson (1985) who found that among a predominately schizophrenic sample (71%), females were more successful than males in avoiding rehospitalization over a two-year follow-up period. This relationship however was not a strong one, and sex accounted for only a very minimal proportion of the total variance ($r=.034$, $p<.05$).

Race. As with age and sex, race or ethnic origin has not been found to be a significant predictor of recidivism (Buell & Anthony, 1973; Buell & Anthony, 1976; Lorei & Gurel, 1973; MacMillan et al., 1986). Thompson (1985) found a small but statistically significant relationship ($r=.07$, $p<.05$) between race and rehospitalization at two years follow-up, with black patients faring worse than whites, however there is a strong possibility that this finding reflects differences attributable to social factors as opposed to race per se.

Marital status. The results comparing marital status to rehospitalization statistics have been variable. While most authors report no significant relationship between these variables (Byers & Cohen, 1979; Buell & Anthony, 1973; Fontana & Dowds, 1975b; Lorei & Gurel, 1973), others have found that across diagnoses, married patients fare better over time than single patients (Goering et al., 1984; Klorman, Strauss, & Kokes, 1977). Veiel and Kuhner (1990), on the other hand, found that among

women treated for depression, married subjects had less favourable outcomes than their single counterparts. It has been suggested that these discrepant findings can in part be accounted for by the fact that marital status may be confounded with other more potent variables such as living arrangement, social competence, and/or emotional support (Buell & Anthony, 1976; Klorman et al., 1977).

Education. As with many other demographic predictors, level of education has not been found to reliably predict rehospitalization (Buell & Anthony, 1973; Buell & Anthony, 1976; Byers & Cohen, 1979; Lorei & Gurel, 1973).

Religion. The effect of religion on post-discharge adjustment does not appear to have been studied extensively. Of two studies found examining this variable, Byers and Cohen (1979) reported that religion was not significantly related to recidivism within one year; and Chu and Klein (1985) found that, among Black schizophrenics, Catholics had significantly fewer rehospitalizations than those with other or no religious affiliations. This latter study raises the issue mentioned earlier of interactive effects, in that certain predictor variables may be relevant for certain subsets of psychiatric patients.

Social Variables

Social variables have recently assumed a position of greater significance, as evidenced in DSM-III's "Axis V" for explicitly coding and considering social and occupational functioning as part of the "Global Assessment of Functioning".

Employment history. Employment history prior to hospitalization has been extensively studied as a potential predictor of recidivism and has been operationalized in a variety of ways including occupational status or level, number of years employed, months since last worked, months worked full-time in last five years, number of jobs in last five years, longest job in last five years, etc. Regardless of the sample or the time to follow-up (i.e., six months to five years) findings have generally been consistent that employment history does not reliably predict rehospitalization, though it may be a useful index in terms of predicting post-hospital employment (Buell & Anthony, 1973; Buell & Anthony, 1976; Byers & Cohen, 1979; Fontana & Dowds, 1975b; Goering et al., 1984; Lorei & Gurel, 1973; Strauss & Carpenter, 1977). Brown et al., (1958) report the exceptional finding that "pre-admission achievement in areas of employment" is "significantly related" to post-hospital success in terms of recidivism at one year follow-up, though the magnitude of this relationship was not reported.

Social contacts. Of the studies surveyed that reported directly on the relationship between pre-hospitalization social contacts and rehospitalization, discrepant results have been found. Social withdrawal and social contacts have not been found to predict relapse of schizophrenics at two (MacMillan et al., 1986) and five-year (Strauss & Carpenter, 1977) follow-up periods. However, among a group of Black schizophrenics, those who participated in community activities prior to hospitalization were rehospitalized less frequently over a 12 month follow-up

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period than those whose participation was minimal (Chu & Klein, 1985). Similarly, Nuttall & Solomon (1965) found that a factor representing "social withdrawal and few interests" prior to hospitalization, significantly predicted the percentage of time spent in hospital between admission and follow-up, at one year post-discharge.

Criminal history. Some authors have looked at legal history as it relates to future recidivism, and some positive results have been reported. Lorei and Gurel (1973) found that "trouble with the law since age 18" was significantly related to recidivism at nine months ($r=.11$, $p<.01$) amongst male schizophrenics. Similarly, Willer and Miller (1977) found that trouble with the law accounted for 3.1% of the variance in recidivism figures at six months follow-up. On the basis of these studies, the specifics of this relationship is not clear. It may reflect those individuals with a propensity towards aggression and/or violence, as this factor would play a role in readmissions with respect to the protective function of hospitalization, as well as in certain criminal behaviors.

Personality

Personality has been defined by Millon (1986) as a "distinctive configuration of interlocking perceptions, feelings, thoughts, and behaviors that provide a template and disposition for maintaining psychic viability and stability" (p. 643). Disorders in this realm are differentiated from symptoms of major psychiatric illness on the basis of a maladaptive constellation

of enduring and ego-syntonic traits that are universal to man, even in the absence of disorder (Foulds et al., 1965).

With regard to research pertaining specifically to post-hospital discharge outcomes, as early as 1964, Lorei remarked that personality may be an important factor to consider, especially as "normal" traits are more visible at the time of release from hospital than are symptoms, since the latter have presumably remitted significantly in order to warrant discharge. However, this area of research appears to have been relatively neglected, perhaps because early attempts to prognosticate with personality variables had not been entirely successful.

Neither the California Personality Inventory, the Minnesota Multiphasic Personality Inventory, nor the 16 Personality Factor questionnaires have been able to significantly predict post-discharge outcome (Lorei, 1964; Marks et al., 1963). However, although these measures were not able to predict recidivism, significant relationships were found between certain scales and behavioral adjustment at one-year follow-up. For example, among those schizophrenics not rehospitalized over a one-year period, significant correlations were found between all MMPI scales and subscales (except the Psychopathic deviate subtle subscale) and the Independence Scale of the 16PF, and follow-up measures of behavioral adjustment. These correlations ranged from .34 to .55 and fell between the $p < .01$ and $p < .05$ levels of significance, suggesting that for certain groups, personality may indeed contribute significantly to subsequent adjustment (Marks et al., 1963). The MMPI however, though entitled a "personality

inventory" more correctly is a measure of mental illness and not enduring ego-syntonic traits. Hence, findings involving the use of this instrument more correctly represent relationships between level of pathology and outcome.

The results of other studies, not designed specifically to assess personality factors, have also suggested that certain of such characteristics may be relevant to post-discharge outcome. Nuttall and Solomon (1965) for example found that the percentage of time spent in hospital over the period between admission and follow-up over a one year period, was significantly predicted by factors incorporating premorbid social withdrawal, a passive and indifferent orientation to life, and stubborn and egocentric attitudes (versus self-critical, self-doubting, and sensitivity to criticism). On the latter factor, those described as stubborn and egocentric had significantly better outcomes in terms of time spent in hospital than those described as self-critical, self-doubting, and sensitive to criticism. In this study, premorbid factors were measured by means of two prognostic rating scales, scored on the basis of interview and case history data by two independent practitioners.

Similarly, MacMillan et al. (1986) and Bland (1982) in a review of more recent studies, found that premorbid schizoid or asocial personality traits were significantly related to post-discharge outcome, though this variable typically accounted for only a limited portion of the total outcome variance.

Pietzcker and Gaebel (1987) speculate that negative depressive self-ratings at time of discharge (in contrast to

strikingly discrepant and more optimistic observer ratings),
including pessimism regarding the future, are likely to suggest
an unfavorable prognosis. This post hoc hypothesis was not
however tested in their study.

Though not specifically designated as "personality",
substance abuse is a behavior reflecting personality tendencies,
among other factors. One author has investigated the
relationship between alcoholism and return to hospital over nine
month follow-up periods. Lorei (1964) found that neither "heavy
drinking" nor "problems with alcohol in the last five years"
(Lorei & Gurel, 1973) were significantly correlated with
recidivism.

Intelligence, a function of the personality's ego, has also
been studied in relation to hospital re-admission. Thompson
(1985) reported that intelligence as measured on admission to a
day-treatment program was significantly, though very modestly
correlated ($r=.03$, $p=.05$) with recidivism at two-years post-
discharge. He acknowledges however that this finding is
difficult to interpret as the effects of illness and chemotherapy
on intellectual functioning are largely unknown, and hence are
likely confounds.

Though published studies examining the relationship between
personality and post-discharge adjustment are scant, the results
of research in other areas of psychosocial and bio-medical study
confirm the notion that personality does have a significant
effect on well-being. Specifically, research examining the
effects of life stress on ultimate health has found that certain

personality dimensions act to buffer the effects of stress. Among these dimensions, dispositional optimism, locus of control, and interpersonal dependency have emerged as potent variables (e.g., Scheier & Carver, 1985; Craig et al., 1984; Hirschfeld et al., 1977) and ones that may have specific relevance to the particular situation of psychiatric hospital discharge.

The literature pertaining to empirical findings regarding these specific variables, as well as newer, theoretical conceptions of personality and illness will be reviewed in greater detail in the following chapter entitled "Personality as Predictor of Health and Illness". It is on the basis of this more recent literature that the hypotheses of the empirical investigation to follow will be based.

Summary

The search for potent predictors among pre-existing characteristics has had limited success. Of demographic characteristics, only marital status has been found to be potentially useful, but inconsistent results in this area suggest that other factors may be operating to moderate the effects of this variable. In fact, it has been suggested that factors confounded with marriage such as emotional support or social competence may be responsible for the observed effects. Employment history, while bearing some relationship to post-hospital employment, has also been found to be unrelated to outcome in terms of recidivism. Prior social history including legal history and history of substance abuse has been shown to have only a modest relationship to rehospitalization figures, and

as with marriage, this may in fact reflect on psychological status in an indirect way.

One class of variables that has largely been neglected in research to date is that of personality characteristics. Although published research in this area is sparse and the findings of earlier studies were not promising, this variable merits further investigation as personality is now recognized to be important in terms of providing the foundation upon which mental illnesses develop and progress (Millon, 1986). In addition, personality has repeatedly been shown to be a potent contributor to well-being in many other diverse life situations, findings to be discussed further in the chapter entitled "Personality as Predictor of Health and Illness".

In-hospital Predictors

Predictors here classified include such variables as severity and chronicity of illness, hospital behavior, and hospital treatment regime. This class of variables would seem to be most promising in terms of outcome prediction as they directly address the patients' status with regard to functional ability, and the success of those steps taken to directly enhance functioning.

Severity of Illness

Severity of illness is a multi-variate phenomenon comprised of factors such as symptomatology, diagnosis, and chronicity. If rehospitalization indeed reflects deteriorations in psychiatric status, then one would expect symptomatology in particular, to heavily influence re-admission rates, ceteris paribus.

Symptoms / Diagnosis. Despite current knowlege that the application of diagnostic labels is determined by many factors other than symptomatology, thus rendering them somewhat unreliable, a multitude of studies have been published examining the relationship between diagnosis and outcome. For example by the year 1961, over 800 articles had been published on the outcome of schizophrenia alone (Strauss & Carpenter, 1972).

The use of diagnosis as a potentially significant predictor of post-discharge outcomes is predicated on the notion that symptomatology per se is a major factor contributing to the decision to rehospitalize. However, the results of studies examining reasons for re-admissions to hospital have not totally supported this assumption.

Talbott (1974) found that paranoid symptomatology accounted for 37% of all psychiatric admissions to a New York State psychiatric hospital, while the presence of psychotic symptoms has been found to account for only 28 to 29% of psychiatric admissions (Harris et al., 1986; Talbott, 1974). Hence, as many as 30% of all psychiatric admissions are thought to result from factors other than continuing symptom progression. Other reasons cited for hospitalization include aggressive or assaultive behavior, substance abuse, medical illness, absence of social supports, and patient's having no place to live or wanting to escape from home (Harris et al., 1986; Talbott, 1974).

Given these admission statistics, it is not surprising that neither diagnosis or symptomatology have been found to significantly differentiate recidivists from those who are able

to remain successfully out of hospital. This finding of a lack of relationship between disease and re-admission holds true across follow-up times ranging from six months to 15 years (Anthony et al., 1978; Buell & Anthony, 1976; Byers & Cohen, 1979; Fontana & Dowds, 1975b; Lasky et al., 1959; Pietzcker & Gaebel, 1987).

Though differences in rehospitalization rates on the basis of diagnosis are generally found to either be non-significant or are able to explain only a very limited portion of the variance in outcomes (i.e., typically less than 5%), there is a consistent trend that psychotic disorders (Blumenthal et al., 1982; Goering et al., 1984) and schizophrenia in particular (Bland, 1982; Bland & Orn, 1982; Buell & Anthony, 1973; Gaebel & Pietzcker, 1975; Hawk, Carpenter, & Strauss, 1975; Pietzcker & Gaebel, 1987; Strauss & Carpenter, 1972) have somewhat worse outcomes than other diagnoses. (In fact, it has been suggested that schizophrenia with good prognosis may more accurately represent affective disorder (Klorman et al., 1977)). Hence the historical notion that poor outcome is intrinsic to the concept of schizophrenia may have some validity.

Numerous attempts have been made to identify "poor prognosis" groups within schizophrenic samples. Though some small differences have been found, the promise of a "process" vs "reactive" typology or other traditional sub-type classifications has failed to yield consistently significant results. Whether symptoms alone or various diagnostic systems are used, there is a large degree of heterogeneity and overlap between schizophrenic

subgroups, rendering prognostication on the basis of diagnostic indices unreliable (Bland, 1982; Hawk et al., 1975; Strauss & Carpenter, 1972; Strauss & Carpenter, 1974; Strauss & Carpenter, 1977; Strauss, Loevsky, Glazer, & Leaf, 1981).

The general concensus regarding diagnosis and/or symptomatology is that neither are effective at predicting outcomes, particularly rehospitalization rates. These findings suggest that factors extraneous to the nature of the illness itself have a powerful bearing on the need for subsequent hospitalization, and/or that current nosologies have failed to sufficiently consider prognosis as a differentiating indice. Alternatively, or in addition to these possibilities, these findings may reflect the longstanding problem of unreliability in psychiatric diagnostic practise.

Number of previous admissions. A second, more reliable variable relating to the severity of psychiatric illness is hospitalization history. Perhaps the most consistent finding in post-discharge outcome studies is the fact that the number of previous admissions significantly predicts recidivism amongst various diagnostic groups, and over follow-up periods ranging from six months to 15 years post-discharge (Blumenthal et al., 1982; Brown et al., 1958; Buell & Anthony, 1973; Goering et al., 1984; Lasky et al., 1959; Lorei & Gurel, 1973; Miller & Willer, 1976; Rosenblatt & Mayer, 1974; Strauss & Carpenter, 1977; Thompson, 1985; Willer & Miller, 1977). In fact, the number of previous hospitalizations has repeatedly been found to be the best predictor of recidivism (Anthony & Buell, 1974; Anthony et

al., 1978; Buell & Anthony, 1976), a finding that has been observed in over 30 different study populations, and one that is independent of both diagnosis and degree of illness (cf. Rosenblatt & Mayer, 1974).

However, despite the reliability of this finding, and that a continuous ordinal relationship between previous history of hospitalization and incidence of rehospitalization has been demonstrated for each year over a 15 year follow-up period (Engelhardt et al., 1982), the practical utility of admission history as a predictor of recidivism is limited. Typically, number of previous psychiatric admissions has been found to account for only a limited portion of the variance in recidivism, with findings usually under five or 10%, but varying from as much as 26% to only two percent (see above citations). The practical implication of these statistics is illustrated by the Engelhardt et al., (1982) data, where in a sample of 646 schizophrenic out-patients, 38% of those most prone to rehospitalization on the basis of admission history had no major psychiatric hospitalization over a course of 15 years.

It has also been suggested that the link between re-hospitalization and the number of prior admissions is a circular one. Hoult (1986) comments that once a patient is known to have had a psychiatric admission, he is much more likely to be re-admitted, on the basis of that history alone. What these admission:re-admission findings actually tell us then, with respect to the nature of the patient, regarding his subsequent vulnerability to re-hospitalization, is unclear.

Chronicity and duration of hospitalization. As there is a high degree of heterogeneity of outcomes within and across diagnostic groups, some have attempted to measure severity of illness on the basis of duration of prior hospitalization or alternatively, have derived "chronicity indices" or "chronicity factors" using a combination of variables including age of onset or first admission, length of time since last hospitalization, and duration of index hospitalization.

Of the above noted "chronicity" factors, duration of previous hospitalization(s) has been the most widely studied. Though Buell and Anthony (1976) report that the length of hospitalization prior to the current treatment is related to the likelihood of return to hospital in the future, other more recent studies have reported contradictory findings. Duration of hospitalization (Goering et al., 1984), total time in hospital, and length of current hospitalization (Byers & Cohen, 1979) have not been found to significantly relate to recidivism over periods of 6 months to two years. Similarly, Lorei and Gurel (1973) found that neither the number of in-patient days at index hospitalization or the total number of months in a psychiatric hospital were significantly related to future recidivism over a nine month period.

It has been suggested that length of prior hospitalization adds no unique variance to recidivism and that it has lost its significance as a meaningful prognosticator because it is confounded by factors other than patient status, such as needs of the hospital, physician, and family (Buell & Anthony 1973; Byers

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& Cohen, 1979; Kokes et al., 1977). Bigelow et al., (1988), for example, found that a large portion of psychiatric patients were hospitalized longer than was therapeutically necessary because no community facility was willing to accept them due to difficulties such as assaultive tendencies, fire-setting behaviors, substance abuse, and wandering or escape. Given the current thrust to shorten hospital stay, it is also possible that some re-admissions are the result of too short a hospital stay, or premature discharge. The finding of Blumental et al. (1982) that the greatest risk of relapse over a seven month period is during the first 30 days post-discharge lends some credibility to this hypothesis.

Aside from severity of illness, the hypothesis that duration of prior hospitalization should predict future admissions, is also predicated on the concept of induced "institutional neurosis". However, since duration of hospitalization does not consistently relate to future recidivism, the notion that institutionalization strengthens inadequate behavior patterns (Pishkin & Bradshaw, 1960) must be questioned. In interpreting earlier findings on "institutional neurosis", it has been suggested that while "shorter stays [may] discourage institutionalization, ... [it is unclear] whether institutionalization is something done to the patient by the hospital setting or is the result of the selective loss of motivated patients" (Erickson, 1975. p. 525).

In studies employing "chronicity" measures other than length of prior hospitalization(s), Byers and Cohen (1979) found that

neither a history of continuous hospitalization for a period of at least six months prior to index admission, nor age at first psychiatric admission were significantly related to recidivism rates at one year. Fontana and Dowds (1975b) report that greater "chronicity" (including length of time since last hospitalization) was significantly related to recidivism at both six months and one year post-discharge. The significance of this latter finding is difficult to interpret however, as number of previous admissions, diagnosis, and employment history were also combined in their chronicity index. Miller and Willer (1976) found that the variable "in hospital during year previous to index hospitalization" accounted for 8.4% of the variance in recidivism at six months, a finding more robust than the number of prior admissions. There is a possibility however, that this latter finding again, at least partially reflects the effects of premature discharges.

In general, duration of prior hospitalization and other chronicty measures have not proven to be successful predictors of re-admission. The few exceptions to this conclusion are generally not interpretable, as "chronicity" measures have typically included the number of previous admissions (a known predictor) in this indice. As Erickson (1975) has concluded: "... it appears that patient movement statistics are so full of fallacies and are so difficult to interpret meaningfully ... that they must be regarded as useless or misleading if taken by themselves" (p. 526).

In-hospital Adjustment

The rationale behind using in-hospital adjustment as a potential predictor of post-discharge outcome is based on the presumption that the decision to release a patient from hospital results from some estimate of the patient's "improvement". Assuming further that improvement is a person-related or intrapersonal phenomenon, then improvement while in hospital is assumed to generalize to improvement while in the community. Sound as this logic may seem, the degree of congruence between hospital and community adjustment has been found to be minimal as best.

Ellsworth and colleagues (Ellsworth, Foster, Childers, Arthur, & Kroeker, 1968) in an extensive study of patient adjustment, found that in fact the opposite was true. Patients who were later judged to be independent and socially assertive in the community tended to have made poor hospital adjustment. Additionally, symptoms and social adjustment as viewed by the patients' relatives in the community, were found to have little relationship to ratings of symptoms and adjustment as viewed by staff in the hospital setting. An exception to these findings emerged when the rater was held constant across settings. In this case, consistency in ratings of "motivation" and "trusting-friendly" accounted for 14% of the variance in patient outcome scores. Hence it would seem that behaviors valued as reflecting positive adjustment by hospital staff are different than those behaviors judged adaptive by significant others, and furthermore, that the same behaviors judged later as adaptive in the community

are not necessarily judged as adaptive in the hospital setting. Ellsworth et al., (1968) concluded that overall there is no relationship between hospital adjustment at release and post-hospital adjustment, but rather, post-hospital adjustment is determined by an interaction of a variety of person and situation characteristics.

In his review of the literature, Erickson (1975) reached a similar conclusion that measures taken in the hospital setting are not significantly related to measures of post-hospital adjustment; and, in particular, that those who show good adjustment in hospital are not necessarily the same individuals who will show good adjustment in the community later on. However, Nuttall and Solomon (1965) did report that "socially undesirable ward behavior" (poor hygiene and grooming, social withdrawal, and non-conformity and a lack of co-operation with institutional norms) was a consistent and powerful predictor of the percentage of time spent in hospital between admission and follow-up, one year later.

One possible interpretation of these findings is that behaving "well" on the ward enables quicker release, and hence, less total time spent in hospital. It is also of interest to note that the pathological presense of "ideas of reference" or the belief that someone controls one's behavior, was highly correlated with "co-operative" ward behavior. Again, the meaning of "improved" hospital behavior is unclear at best.

A more direct approach to predicting recidivism on the basis of hospital behaviors was taken by Lasky et al., (1959). They

asked staff and patients in a Veterans Administration Hospital to rate each patient on the predictor question: "Do you believe that this man will have to be hospitalized again for a neuropsychiatric condition within a period of two years following discharge?" (p. 214). In this study, pooled monthly ratings made during the hospitalization period by staff (r=.66, p<.001) and patients (r=.58, p<.001) had an average accuracy rate of 70% in predicting future recidivism for individual patients. Staff were also able to make accurate predictions (r=.62, p<.001) on the basis of one rating made in the month prior to discharge. In no cases however, were patients able to make accurate self-predictions[1].

Though some researchers have had success in using in-hospital behavior to directly predict recidivism, the majority of published studies conclude that ratings of observed "improvement" in the hospital do not translate into improved community living skills (see for example, Ellsworth et al., 1968; Erickson, 1975). The suggestion of these findings is that behaviors that are valued as, or in fact are adaptive in the hospital setting, are not those same behaviors that serve patient's well, later in community life.

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[1] It is also of interest to note here that among the staff, psychologists were able to make the most accurate predictions across four different areas of adjustment (rehospitalization, work, family, health). In addition, various staff occupational groups were not able to predict the area(s) closest to their area of specialization, while staff in other occupational groups were able to make these predictions. For example, Occupational Therapists were unable to predict work adjustment, Social Workers missed in predicting family adjustment, and medical staff missed on the prediction of health adjustment. These researchers conclude that these findings suggest a loss of objectivity when moving close to oneself or one's area of professional competence.

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In-hospital Treatment Regime

Anthony and colleagues (Anthony et al., 1972; Anthony et al., 1978) reviewed the literature on the relationship between in-hospital treatment and patient outcome in terms of recidivism. These authors concluded that regardless of the type of traditional in-patient treatment techniques patients receive (e.g., individual therapy, group therapy, drug therapy, electroshock therapy), their recidivism rates are not differentially affected. Similarly, more innovative hospital-based treatment techniques such as milieu therapy, token economies, and non-traditional groups are unlikely to have a direct singular affect on re-admission rates, despite the fact that they have a demonstrated positive effect on patients' within-hospital behavior (Anthony et al., 1972; Anthony et al., 1978).

Support for the notion that setting and treatment techniques per se do not make a substantial independent contribution to patient outcome is found in a study where recidivism rates at six months and two years did not differ between three different types of in-patient treatment settings (i.e., research institute, provincial hospital, general hospital), where levels of staffing and geographical location differed (Goering et al., 1984). In each of these facilities, a variety of traditional in-patient treatment techniques were employed with a variety of diagnoses, and findings reflect average re-admission rates across diagnostic categories and therapies.

More innovative in-patient treatment regimes that are "extremely comprehensive" and multi-faceted in design (e.g., token economy, milieu therapy, skills training, and physical exercise) have been associated with some positive, though inconsistent results, in terms of recidivism rates (Anthony et al., 1978). Such regimes may, however, make an indirect contribution to more positive outcomes by restructuring the hospital atmosphere. For example, decreased recidivism rates have been found in wards where all staff participate directly in treatment planning and where professional staff are viewed as being motivated and non-dominant. Also, a separate study found that the wards with the least recidivism were those where autonomy and independence of patients were emphasized (cf. Anthony et al., 1978).

Together, these findings suggest that treatment technique per se does not make a direct, independent contributrion to future hospitalization course.

Summary

Limited success has been achieved by using in-hospital variables as predictors of recidivism. Though diagnosis, duration of hospitalization, and "chronicity" measures do not correlate significantly with re-hospitalization, the number of prior admissions has consistently been found to be among the best, if not the best, predictor of recidivism. Unfortunately, this variable accounts for only a small portion of the total outcome variance, typically less than ten percent.

Direct measures of in-hospital behavior have also had limited success. In-hospital adjustment has been found to be an unreliable index of post-discharge success, and in fact, some studies have found a negative relationship between in and post-hospital adjustment. In-hospital treatments generally do not singularly effect post-discharge outcome, although settings where comprehensive treatments are provided, and patient autonomy and independence are stressed by staff, have reported some favourable outcomes.

Post-discharge Predictors

To date, several current situational factors have been studied. These have included post-hospital employment, post-discharge social support, post-discharge living arrangement, and aftercare services. With the exception of aftercare services, these variables are typically studied as measures of outcome in their own right, as opposed to being used as predictors of rehospitalization. The literature examining these variables as predictors of recidivism is therefore relatively sparse.

Employment

Post-hospital unemployment is a major problem for discharged psychiatric patients, with some authors reporting rates as high as 85% (Carling, 1990). Along with its direct result of increased vulnerability through poverty[2] and homelessness, lack of employment also contributes to social isolation and an absence

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[2] The average annual income reported in 1986 for people with psychiatric disabilities ranged from three to seven thousand dollars (Carling, 1990).

of the esteem often associated with productive functioning
(Chamberlin & Rogers, 1990).

The magnitude of this problem is evidenced in the report of
Anthony et al., (1972) of their review of the literature on post-
hospital employment. These authors noted that only 30-50% of
patients become gainfully employed during the first six months
after discharge. This rate falls to between 20-30% when
employment percentages are based on either employment status at
one-year follow-up, or full-time employment during the entire
follow-up period regardless of the time period sampled.

Other authors find this same change in employment figures
over time. Employment rates are lowest at one-month post-
discharge and do not change significantly during the first three
months post-discharge, but begin to show some recovery towards
admission levels by six months post-discharge (Ellsworth et al.,
1968; Fontana and Dowds (1975a). Goering et al., (1984) found
that full-time employment figures in a sample of about 500
psychiatric patients were 32% at six months post-discharge, but
dropped to 19% at two years post-discharge.

Of studies examining the relationship between post-hospital
employment and recidivism, inconsistent results have been
reported. Gaebel and Pietzcker (1985) for example, found that
post-hospital employment correlated with symptoms but not re-
hospitalization at one year follow-up. Brown et al., (1958)
found that of the 41% of their sample who worked six months or
longer, 97% escaped re-hospitalization over a one-year follow-up
period, while of those never employed, only 46% were not

rehospitalized. Similarly, in a two-year follow-up study, Strauss and Carpenter (1972) found that employment and non-hospitalization were significantly correlated for both schizophrenic (r=.54) and non-schizophrenic (r=.39) samples. As only time spent outside of hospital was considered as counting for percentage of time unemployed, these latter authors attributed their findings to patients' loss of motivation and confidence to seek employment, and to the severing of previous job contacts through repeated and long-term hospitalizations.

Whether the findings of a positive relationship between employment and non-rehospitalization reflect the protective advantage conferred by employment itself through social contacts, enhanced self-esteem, etc., or whether they reflect the ability to sustain employment (and avoid hospitalization) as a result of lower levels of pathology and dysfunction, remains to be clarified. Most likely, both of these factors interact and contribute to findings of a relationship between post-hospital employment and the avoidance of return to hospital.

Social Support

As with employment, social isolation and withdrawal is a major problem for psychiatric patients. It has been reported that as many as 32% of rehospitalizations are directly related to an absence of social supports, and in as many as 61% of all rehospitalizations this factor is also implicated (Harris et al., 1986). Goering et al., (1984) interviewed a sample of about 500 ex-psychiatric patients, at both six months and two years post-discharge. They found that many were lacking in social support,

and were experiencing significant difficulties in areas of social adjustment. In their sample, 20% reported that they had no one to count on, 64% reported problems in dating relationships, 62% reported difficulties in the area relationships with friends and acquaintances, and 57% had difficulty with the use of spare time.

Social functioning can be operationalized in many different ways including contacts with family, friends, or community organizations, and there is some suggestion that each of these different measures follows a different progression over time. Fontana and Dowds (1975a) for example, found that while organizational participation demonstrated a significant improvement between discharge and follow-up six months later, social involvement did not show any significant changes over this time period, as rated by both patients and their significant others.

Though methodologies differ slightly, findings are generally consistent in suggesting that social functioning is related to future recidivism. Strauss and Carpenter (1972) found significant correlations between social contacts and non-hospitalization over a two-year period for both schizophrenic (r=.26) and non-schizophrenic (r=.16) ex-patients. Miller and Willer (1976) also found significant relationships between six month recidivism figures and use of leisure time, personal relationships, and interpersonal skills, as measured by the Self-Assessment Guide, though each of these variables accounted for less than one percent of the total outcome variance.

As with post-hospital employment, these findings are difficult to interpret. Social functioning likely reflects degree of pathology, as well as contributing indirectly to the manifestations of illness by providing buffers through social supports. Nonetheless, indices of post-discharge social involvement appear to bear a significant, if only minor, relationship to future re-hospitalizations.

Living Arrangement and Family Influence

Inadequate housing conditions. Housing and living arrangements are another major problem for psychiatric patients, and this is, at least in part, related to the problem of unemployment and poverty. In addition to these patient factors, the last decade has seen a decline in affordable housing stock together with a general rise in the cost of housing relative to income (Anthony & Blanch, 1990; Carling, 1990). Together these factors have resulted in a population of homeless mentally ill in the United States that is in the range of 200,000, representing approximately one third of the total homeless population (Levine & Rog, 1990).

Inadequate housing conditions have been found to be a significant factor contributing to hospital admissions. Talbott (1974) reports that 10% of all admissions to a New York State psychiatric hospital were because patients had no place to live or wanted to escape from home. Forty-six percent of all adult admissions to the psychiatric emergency service at San Francisco General Hospital were either homeless or tenuously domiciled (Ball & Havassy, 1984). Goering et al., (1984) reported that

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among 505 ex-psychiatric patients six months after release from hospital, one-fifth were living in inadequate housing conditions, and two-fifths expressed dissatisfaction with current living arrangements.

Residential relationships. Aside from homelessness, a variety of other living situations have also been studied in the context of re-hospitalization studies. In this area of research, inconsistent findings have been published. Non-schizophrenics (Brown et al., 1958) and schizophrenics (Blumenthal et al., 1982) have been found to fare better in terms of recidivism if living with parents or wives. The opposite has also been reported. Among first-episode schizophrenics, those living in hostels as opposed to "at home" are significantly less likely to relapse over a two-year follow-up period (MacMillan et al., 1986). Though living situation was not specified, Byers and Cohen (1979) also found that "to whom discharged" was modestly but significantly correlated ($r=.256$, $p<.01$) with recidivism measures at one year follow-up in a sample with mixed diagnoses.

In attempting to explain these inconsistencies, some have argued that living situation may be confounded with initial levels of severity of illness. It has been suggested for example, that married patients may be less at risk for re-hospitalization as they may have been healthier at the outset, as evidenced in their successful heterosexual relationship (Blumenthal et al., 1982). Additionally, different family dynamics have also been found to contribute to differential outcomes.

Family tolerance for residual schizophrenic symptomatology for example, has been found to be associated with decreased recidivism over a 12 month period (Chou & Klein, 1985).

Expressed emotion. Emotional responses and interpersonal interactions within the home also have become a subject of investigation, inspired by the earlier and unexpected findings that patients often fare better when discharged to situations other than spousal or parental homes (Falloon, 1988). From this line of study, the variable "expressed emotion" has emerged (Brown, Monck, Carstairs, & Wing, 1962; Brown, Birley, & Wing, 1972; Vaughn & Leff, 1976a).

Expressed emotion is defined by "the number of critical comments expressed by the relative about the patient, hostility expressed toward the patient (almost always associated with high levels of criticism), and emotional overinvolvement, viz., excessive protectiveness and intrusive concern" (Karno et al., 1987, p. 143), and is contrasted with more secure and supportive environments which allow for individuation.

Expressed emotion has become a variable of considerable interest in the more recent literature, and has consistently been linked to unfavorable outcomes. Patients released to home settings where one relative has a high expressed emotion index are at a much greater risk of relapse than are those patients released to homes with only low expressed emotion index relatives (Karno et al., 1987; Vaughn et al., 1982; and see Bland, 1982 for review). It has been found that "high expressed emotion in at least one household member during the pre-admission crisis raises

the probability of subsequent florid episodes of schizophrenic symptoms fourfold" (Falloon, 1988, p. 270).

Though cultural differences have emerged in the prevalence of high versus low expressed emotion, the predictive importance of high expressed emotion has been validated cross-culturally (Karno et al., 1987; Vaughn et al., 1982), and also generalizes across diagnostic groups other than schizophrenia (Falloon, 1988; Vaughn & Leff, 1976b).

Aftercare Services

This category includes any interventions provided to patients following their discharge from psychiatric facilities, and ranges from basic medication maintenance to the more sophisticated, assertive outreach programs currently being developed and intensively studied. Generally speaking, the more comprehensive the aftercare, the more successful it is in enabling patients to maintain themselves in the community.

Outpatient drug maintenance. A large body of data supports the conclusion that withdrawal from prescribed medication leads to behavioral deterioration (Anthony et al., 1978, p. 369). Gaebel and Pietzcker (1985) cite a review study that reported an "assured relapse-prophalyctic effect" for 60 to 70% of psychiatric patients. Despite these findings, a large controversy exists on the merits of continuous psychotropic drug therapy because of the serious and often irreversible side-effects of prolonged maintenance medication. In addition, it has been found that "approximately 20-50 percent of patients on placebo do not relapse and that 20-50 percent of patients on

drugs *do*" (Davis, Gosenfeld, & Tsai, 1976 as cited in Anthony et al., 1978, p. 369).

With regard to studies specifically examining the relationship between adherence to medication and recidivism, some positive results have been reported. Gaebel and Pietzcker (1985) found that patients who maintained continuous treatment with neuroleptic medications were rehospitalized significantly less often over a one year period that those who did not maintain medication regimes. Similarly, MacMillan et al., (1986) found that patients on continuous medication regimes were less likely to relapse and be re-admitted to hospital than placebo control subjects. Chou and Klein (1985) found that adherence to prescribed medication was significantly related to less rehospitalization among a sample of black schizophrenics. In none of these studies however, were the effects of treatment contact time examined with regard to findings of medication efficacy.

In contrast to these positive findings, Anthony and colleagues (Anthony et al., 1972; Anthony et al., 1978), after reviewing a large body of literature, concluded that drug maintenance without periodic outpatient treatment contacts does not affect recidivism. What this suggests, is that it is not drug therapy per se that protects patients from rehospitalization, but the effects of medication regimes combined with out-patient treatment contact.

Aftercare clinics. Aftercare clinics or community mental health centres, are where clients are typically referred upon

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discharge from hospital to receive ongoing out-patient treatment. At the mental health centre, the client is assigned to a case manager from amongst a multi-disciplinary team, whose task is to organize follow-up care. This may consist of regular medication review by a staff psychiatrist, counselling or psychotherapy, as well as social and family support where necessary (Hoult, 1986). Typically, the patient is interviewed briefly and has their medication reviewed at least once a month (Anthony et al., 1972). Staff are usually available only during regular working hours, and not in the later evening or on weekends.

After a thorough literature review, Anthony et al., (1972) concluded that there is a significant decrease in recidivism rates for those who attend aftercare clinics. Within six months to one year after discharge these authors found that recidivism rates were typically less than 20%, and as low as 37% for five years post-discharge. There is also some indication that aftercare clinics may be most beneficial for the most severely ill patients, but the problem of inadequate service utilization looms large (Anthony et al., 1978).

The significance of these findings is difficult to evaluate however, as standard aftercare is of a "passive-response" nature, with the initiative to seek treatment often being left to the patients and their relatives (Hoult, 1986). Hence, it is unclear whether the beneficial effects observed in regard to attendance at aftercare clinics is due to the medication received, other kinds of services offered, or type of patient who attends (Anthony et al., 1978). As Anthony et al., (1972) suggest, the

variable of patient motivation, may be more important than the treatment received.

Transitional facilities. Under the heading of transitional facilities are those community services designed to serve as "stepping stones" between in-hospital care and fully independent living. Included here are home or family care, daycare centres or day-hospitalization, halfway houses, sheltered workshops, boarding homes, and patient lodge societies.

In this line of research, the concensus is that continuity of aftercare is significantly related to a reduction in rates of recidivism (Anthony et al., 1972; Anthony et al., 1978; Byers & Cohen, 1979; Dellario & Anthony, 1981; Erickson, 1975; Stein & Test, 1980). However, these differences in re-admission rates are observed only as long as the patient remains a member of the facility, and are washed-out completely by 18 months after treatment termination (see above citations).

With regard to comparative efficacy of the various types of transitional facilities noted above, Braun et al., (1981) noted that there is insufficient evidence to address this question. Kruzich (1985; Kruzich & Berg, 1985) examined potent elements of one residential treatment program. He assessed client's levels of self-sufficiency and community integration, and found these to be significantly affected by the level of individualization of treatment, and the provision of scheduled though flexible daily activities directed towards skills training. In general, however, findings on the long-term efficacy of time-limited transitional treatment programs are not promising.

Carling (1990) goes further, and cites a critique on residential treatment settings as creating major difficulties for the individual patient including learning skills that are most relevant to group living, chronic dislocation through successive moves as improvements in functioning requires a physical move, and an ultimate return to residential treatment because of the inattention to stable housing. Hence, it is suggested that the evidence of effectiveness of residential programs is highly suspect as they fall considerably short of helping people to achieve lasting community integration, and potentially, interfere with a speedy return to independent community living.

Assertive outreach programs. Another newer type of transitional service employs a transitional person rather than a transitional facility. Such rehabilitation-oriented programs are known by a variety of different names such as the Training in Community Living model (TCL), Community Support Systems (CSS), and Assertive Outreach Programs (AOP).

These newer treatment programs evolved in part as a result of the promising results of earlier studies whereby community volunteers or "enablers" provided follow-up counselling that was characterized by extensive involvement in many aspects of the patient's life (see Anthony et al., 1978; and Anthony et al., 1972 for reviews). These "enablers" provided skills training, consultation, and assistance to those patients assigned to them. In these studies, recidivism rates were dramatically reduced for the counselled group. For example, in one study, the one year recidivism rate was 11% for the counselled group as compared with

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34% for the noncounseled control group (Katkin, et al., 1971 as cited in Anthony et al., 1972).

Community-based treatment programs have continued to evolve over time and are now being designed to encompass a vast array of factors that are required if patients are to survive in the community (Anthony, Cohen, & Farkas, 1990). Stein and Test (1980, p. 393) have articulated these requirements as including: material resources such as food, shelter, clothing, and medical care; coping skills to meet the demands of community life; motivation to persevere and remain involved with life; freedom from pathologically dependent relationships; support and education of community members; and a support system that assertively helps the patient with the previous five requirements.

The concept of the Community Support System (CSS) emerged in 1977 as an "approach to building a system of local services for the chronically mentally ill ... and was defined as a network of caring and responsible people committed to assisting a vulnerable population to meet their needs and develop their potentials without being unnecessarily isolated or excluded from the community" (Perlman et al., 1985, p. 405-406). The CSS was developed and implemented by Turner and TenHoor in 1978 (cf. Anthony & Blanch, 1989; and Perlman et al., 1985). Main components of the CSS were case management and local rehabilitative programs. "Case managers at designated agencies were to act as advocates, friendly advisers, escorts, facilitators, and interpreters for their clients. They were to

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help link clients to services and help clients and their families acquire entitlements and successfully negotiate the bureaucracy that they encounter in seeking services" (Perlman, Melnick, & Kentera, 1985, p. 406).

Implementation of such programs however, is extremely complex (Anthony, Cohen, & Farkas, 1990). For example, Anthony and Blanch (1989) list 12 service components involved in CSS and suggest that multiple fragmented service systems can interfere with effective service delivery, and therefore well-co-ordinated resources and services are necessary. Hence, their 12 components are integrated through formal arrangements involving joint planning, financing, training, and monitoring and/or evaluation. They suggest also the need for legislated relationships and program models, financing mechanisms, interagency linkages, and assignment of responsibility.

Stein and Test's (1980) "Training in Community Living" (TCL) assertive outreach treatment program is similar, and was implemented by retrained mental-hospital ward staff who were transplanted to the community. Staff coverage was available 24 hours a day, seven days a week, and patient programs were individually tailored to improve coping-skill deficits. Treatment took place in vivo, and staff taught and assisted patients in daily living activities. Patients were given sustained and intensive assistance in finding a job, were aided in the constructive use of leisure time, and in the development of effective social skills. Perhaps most importantly, the program was "assertive", so that, for example, if a patient

failed to report for work, "a staff member immediately went to the patient's home to help with any problem that was interfering" (Stein & Test, 1980, p. 393-394; and see Test, 1990).

One other highly successful program, that incorporates a similar philosophy, is a unique mutual help organization called GROW Inc. (cf. Salem, 1984). This group was founded in Australia in 1957 by a group of ex-patients recovering from mental breakdown. It now has groups in five countries across the globe. This unique group owes its success to its philosophy of a "caring and sharing community" whereby GROW becomes an integral part of the individual's life through weekly meetings, social gatherings, regularly assigned contacts between members, and drop-in centres. Though involvement in this group is voluntary and the extent of involvement is highly flexible, the group is again assertive in that members go into the hospitals to introduce patients to the organization before they are released, and efforts are made to involve them once they have relocated to the community.

The intent of these programs is to facilitate successful community living for ex-psychiatric patients. Medications are administered and monitored as prescribed, and hospitalization is also used if necessary. Hospitalization however, is intended to be used only for protection when the patient is imminently suicidal or homicidal, when there are significant medical problems, or when psychosis is so severe as to warrant a short-stay admission to interrupt the process as quickly as possible (Stein & Test, 1980).

Though each of these programs describe their components in slightly different terms, basic similarities exist. First, they consist of an integrated system of multiple services designed to assist clients in meeting all their basic needs for community living. Secondly, the programs are flexible with the intention of enabling individual tailoring to suit each patient's particular needs. Third, and perhaps most importantly, the programs are assertive or aggressive, as opposed to passive, in that contact is not left solely to the patient's initiative. The staff go to where the patients are, and treatment takes place in vivo. Finally, programs are intended to be long-term and ongoing, as opposed to time limited. Salem (1984) articulated these as basic characteristics necessary for effective aftercare service.

In evaluating the outcomes of these various assertive outreach programs, there is a large degree of concensus. Patients in the "experimental" condition of some form of assertive outreach program show significantly lower recidivism rates than "controls" receiving standard community aftercare (Bond, Miller, Krumwied, & Ward, 1988; Bond et al., 1989; Cannady, 1982; Carling, 1990; Hoult, 1986; Test, 1990; Test & Stein, 1980).

One of the most dramatic reports on the efficacy of such innovative rehabilitation programs is the "Vermont Story" (Harding, Brooks, Ashikaga, Strauss, & Breier, 1987a; Harding, Brooks, Ashikaga, Strauss, & Breier, 1987b). This is a 32-year prospective, longitudinal study of 269 profoundly ill, long-stay

schizophrenic patients who were discharged from the back wards at the Vermont State Hospital. It found that one-half to two-thirds of this sample were rated as "considerably improved" or "recovered" with the assistance of a "comprehensive rehabilitation program" (Harding, et al., 1987a; Harding, et al., 1987b).

The 32-year follow-up measures of functioning used in this study included well known instruments such as the Global Assessment Scale, The Research Diagnostic Criteria Screening Interview, The Brief Psychiatric Rating Scale, and the Mini Mental State Examination among others. Data from this structured interview battery was combined with clinical observations obtained in the three hour interview, and all ratings were verified by additional informants who knew the subject well. In addition, the interviewers used at follow-up were blind to previously recorded information about the subjects.

So striking in fact are the results of the "Vermont Story" that they challenge the expected uniformly poor outcome inherent in the diagnostic criteria of schizophrenia (DSM-III-R), which describes the most common course as one of "acute exacerbations with residual impairment between episodes" [American Psychiatric Association (APA), 1987, p. 191], and continued symptoms, unemployment, social isolation, and inability to care for themselves.

However, as with the findings on transitional facilities, these differences in outcome do not persist once the program is terminated. Test and Stein (1980) for example, report that when

their TCL program ceased, patients regressed and their use of in-hospital treatment rose sharply.

Braun et al., (1981) after reviewing the literature on aftercare treatment outcomes, concluded that this body of work is fraught with methodological problems. These include biased allocation of patients, insufficient information on potentially confounding variables such as drug therapy, an absence of clear and validated diagnostic criteria, and a poverty of information describing conventional care. As a result, these authors were able to make only a qualified conclusion that: "... selected patients managed outside the hospital in experimental programs do no worse and by some criteria have psychiatric outcomes superior to those of hospitalized control patients ... [but] drug treatment may account for a substantial part of the reduction of hospital admissions in some experimental studies" (Braun et al., 1981, p. 747).

These programs can nevertheless be admired as being in keeping with the policy of treatment in the least restrictive environment with the least intrusive forms of intervention (Pallak, 1990), and possibly in being as effective as hospitalization but at a lower eventual cost. But numerous complaints have been made regarding the current assertive aftercare programs. One of the most widely voiced criticisms is that comsumers of mental health services, (i.e., mental patients and their families) should be, but are not included in the planning of comprehensive community-based service systems, as they are able to identify realistic goals for themselves (Anthony

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et al., 1990; Carling, 1990; Romeo, Mauch, & Morrison, 1990; Weisburd, 1990). As a result, many clients perceive the services as unappealing, inappropriate, or demeaning, and under-utilize them (Anthony et al., 1990; Test, 1990). For example, in a survey of 112 self-identified homeless recidivists, Ball and Havassy (1984) found a strikingly low priority placed on psychological and social services currently offerred in the community. These patients placed blame for their inability to avoid re-admissions on a lack of basic resources for survival such as housing, employment, food, and money. Chamberlin and Rogers (1990) also stress the fact that clients need what everyone else needs: a place to live, a job, and friends.

In addition to the need to involve consumers in the planning of community treatment initiatives, the need for flexibility in treatment has also been repeatedly voiced (Bachrach, 1979; Carling, 1990; Salem, 1984; Test, 1990). "Persons who are psychiatrically disabled need different services, at different times, and at different levels of intensity. ... Thus, the service system must develop a large range of service alternatives, packaged differently for different clients" (Anthony, Cohen, & Kennard, 1990, p. 1250).

In 1988, Farkas, Cohen, and Nemec surveyed rehabilitation-oriented community and hospital agencies, and found that while these programs report that they highly value client involvement, and a program focused on improving skills and resourse utilization, in practise, these values are only beginning to be implemented systematically.

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Summary

Generally speaking, post-discharge measures, as a class, have been more successful in terms of predicting recidivism than factors measured prior to this event. Post-hospital employment, social support, and living situation have all been found to relate to redicivism, though these variables may be confounded with levels of pathology or functional ability. Alternatively, or in addition, these variables may confer a protective function by providing for patients' greater integration in the community.

With respect to living situation, a variable of considerable interest, expressed emotion, has recently emerged. This factor, measuring interpersonal dynamics within the home, has been found to reliably predict post-discharge outcomes; a finding that holds across diagnostic groups and across cultures.

Regarding aftercare services, patient motivation appears to be a powerful moderator of treatment effects, as programs where contact is left to the patients' initiative have reported limited success. Transitional facilities and other time limited programs have demonstrated good outcomes in terms of recidivism, but these positive effects disappear once patients discontinue membership. The most success in aftercare treatment has been reported with the more modern, innovative rehabilitation programs that are comprehensive in nature. Assertive outreach programs in particular, have proven to be extremely successful in terms of reducing recidivism rates. As with other aftercare services, supportive treatment must continue over extended periods of time if benefits are to be maintained.

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Summary

There is a consistency in the finding that past behavior predicts future behavior, or more specifically, there is a marked specificity between specific predictors and their corresponding outcome variable (Anthony & Jansen, 1984; Buell & Anthony, 1976; Kokes et al., 1977; Strauss & Carpenter, 1977; Strauss et al., 1981). For example, number of previous admissions is generally found to be the best predictor of future hospitalizations, while employment history is generally the best predictor of post-discharge employment. In certain cases however, this relationship has not been found to hold, as in the case of in-hospital adjustment failing to predict community adjustment (Ellsworth et al., 1968).

There are many possible criteria to use in assessing outcome following hospital discharge, and most authors now agree that outcome is a multi-dimensional phenomenon with no single variable encapsulating all others (Gaebel & Pietzcker, 1985; Goering et al., 1984; Kokes et al., 1977). Additionally, the correlation between different outcome variables has been found to be modest at best (Erickson, 1975; Strauss & Carpenter, 1977; Strauss et al., 1981) or independent for certain variables (e.g., post-hospital employment and recidivism, see Buell & Anthony, 1976).

Recidivism or rehospitalization however, is a single, highly efficient measure that is most frequently used in the literature on post-discharge outcomes. As an index of ultimate success at reintegration into the community, this variable is uniquely informative. It reflects, or is a consequence of, many other

factors, and hence implicitly recognizes the multi-variate nature
of post-discharge outcome. It is also methodologically superior
in that it is simple to collect, highly reliable, easily
quantified, and readily comparable across studies.

More recently, research efforts have centered around the
search for predictors of post-discharge outcome, or more
specifically, correlates of recidivism, in an attempt to improve
on the high rates of re-admission among psychiatric patients. In
this line of study, measures have been taken before, during, and
after hospitalization, and studies typically include numerous
variables in an attempt to derive a predictive algorithm.

Premorbid predictors include demographics, social and
employment history, and personality, and none of these have been
shown to reliably relate to post-discharge outcome. Personality,
however as a predictor of post-discharge success, has not been
adequately addressed in the literature to date, owing perhaps in
part to earlier reports of non-significant findings. Although
seemingly dismissed by authors in the field, this factor may
indeed hold some promise, as personality has been shown to have
powerful effects on health and illness in other situations. This
hypothesis will be explored further in the section(s) to follow.

In-hospital measures such as severity of illness, ward
behavior, and treatment regimes have also not proven to be useful
in terms of predicting future adjustment. The exception here is
the consistent finding that the number of previous admissions
significantly predicts future rehospitalization. The exact
meaning of this finding is difficult to discern, as presumably,

once a person's psychiatric history is known, the likelihood of rehospitalization is increased. Additionally, though this finding is consistent, the amount of variance in outcome that is explained by this variable is generally limited.

"The need to predict recidivists has long been recognized. Early studies of hospital readmission were principally concerned with predicting readmission from patient diagnosis and personal characteristics. However, the relationship between particular demographic and in-hospital measures and subsequent hospital readmission is small, if there is any at all. These findings have lead some researchers to conclude that current situational factors are better predictors of outcome than the less contemporary factors" (Byers & Cohen, 1979, p. 327-328).

Of the major classes of predictors of rehospitalization, post-discharge factors have proven to be most successful. Modest but consistent relationships have been found between rehospitalization and post-discharge employment, social supports, and living situation, though these variables may be confounded with severity of illness or other aspects of functional capacity. Alternatively, these factors may directly confer protection against rehospitalization by fostering community re-integration. Expressed emotion is a recently developed index of familial interactions and has a strong and consistent relationship with post-discharge outcomes.

Research on the nature of aftercare services has revealed that assertive and ongoing programs are necessary if patients are to remain successfully out of hospital. Many such innovative programs are currently being developed and evaluated, and preliminary findings suggest that comprehensive and long-term

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aftercare is significantly related to post-discharge success in terms of future recidivism.

As previously discussed, the role of personality in the prediction of hospital re-admission has not been adequately addressed to date. Additionally, since this variable has been found to be important to health and well-being in other contexts, further investigation into the utility of personality as a factor influencing post-discharge adjustment appears warranted. In the following chapter, the relationship between personality and well-being will be reviewed, with particular emphasis on the specific personality factors chosen for inclusion in the empirical investigation to follow.

CHAPTER III

PERSONALITY AS PREDICTOR OF HEALTH AND ILLNESS

The idea that personality may prove fruitful as a predictor of recidivism is predicated on the notion that personality structure is the underlying foundation upon which mental illness develops and progresses. This assertion is reflected in the prominence ascribed to personality in the DSM-III, by providing a separate axis (Axis II) for diagnoses within this domain.

> ... Relevant to this partitioning decision was the assertion that personality can serve usefully as a dynamic substrate of affective, cognitive, and behavioral dispositions from which clinicians can better grasp the "meaning" of their patients' more transient or florid disorders. In the DSM-III, then, personality disorders have not only attained a nosological status of prominence in their own right, but they have been assigned a contextual role that makes them fundamental to the understanding of other psychopathologies. ... Psychological ill health [is] not merely a product of psychic stress alone, but represents deficiencies in the personality systems' capacity to cope with particular psychosocial environments. ... [Furthermore] the ordinary characteristics that comprise the patient's personality will elicit reactions that feed back to shape the future course of whatever impairments the person may already have... [and] influence whether their problems will improve, stabilize, or intensify (Millon, 1986, pp. 642-644).

However, despite this recognized import of personality, the patient's personality is still largely neglected in contemporary psychiatric practise (Walton, 1986).

Walton (1986), conducted an exceptional longitudinal study, spanning more than ten years, investigating the empirical relationship between personality and psychiatric illness. He concluded that the relationship between personality and illness outcome is a complex, interactive one. He found for example,

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that sociopathic patients with less severe illnesses do as well prognostically as those not personally deviant, but those with sociopathic traits who have serious illnesses recover less well. He further concluded that the category approach advocated by DSM-III is not employed reliably by psychiatrists, which is a serious implication for research attempting to examine this variable. A dimensional system of personality assessment, on the other hand, based on trait ratings, was found to be significantly stable, even over periods of up to five years. Though Walton's research did not support the hypothesis that personality diagnosis predicts outcome from illness, he did find that this variable had predictive implications for the adequacy of patients' subsequent social adjustment, three years later. Equally informative in this regard were category diagnosis, dimensional profiles, and psychometric tests of personality.

As previously discussed, personality has begun to achieve a position of increased prominence in more recent years. DSM-III has established personality as a unique dimension, separate and distinct from other dimensions of psychiatric illness, and as an important factor to consider in the development, course and eventual outcome of other disorders.

In addition to DSM-III's instruction to include personality in one's consideration of patient status, studies in other areas also provide support for the notion that personality may have a significant bearing on post-discharge outcomes.

In the literature on the stressful life events - illness paradigm, personality has emerged as a central variable. As a

result of the repeated finding that the highly reliable correlation between stressful life events and both physical and mental illness was quite low, researchers began to look for variables that moderate, buffer, or systematically vary the illness-provoking effects of life stress. This paradigm shift from a linear, single factor cause and effect model to a multidimensional, interactive framework was also reflected in the "vulnerability theory" conception of the etiology of mental illness (Zubin & Spring, 1977). Zubin and Spring (1977) posited that susceptibility to illness was multi-dimensionally determined, with explicit consideration of a host of factors including genetic and biological constitution, learning experiences, social support, coping styles, stressful life events, psychological predispositions, and personality. This theoretical shift was eventually empirically demonstrated in a variety of studies examining idiosyncratic tendencies, and groups of individuals who are particularly susceptible or resistant to illness when under stress. Personality then was established as a potent moderator variable in the effects of life stress.

In this area of research, several different personality dimensions have been studied, including "Locus of Control", "Sensation Seeking", the "A-B" dimension, coherence, commitment, self-esteem, self-denigration and mastery, hardiness, optimism, and independence (see Toth, 1986 for a review of these studies). On each of these dimensions, the significant impact of personality on health and well-being has been empirically demonstrated.

Of the vast and potentially unlimited array of personality characteristics available for study, three specific dimensions have been chosen for investigation in the empirical study to follow: dispositional optimism, locus of control, and interpersonal dependency. These particular dimensions were chosen as they have been used in other areas of research where they have had a significant effect on health-related outcomes, but have yet to be studied in the context of post-discharge success. In addition, they have theoretical relevance regarding the particular situation of discharge from psychiatric facilities. These dimensions and the measures available for each will be described in turn, and the literature documenting their potency in terms of well-being will be reviewed.

Dispositional Optimism

Dispositional optimism was selected for the present study on the basis of recent research linking this variable to a variety of positive health-related outcomes.

Although there has long been a popular interest in the 'power of positive thinking', this variable is a relatively new concept in the psychological literature, first mentioned in the early 1980's by Carver and Scheier (1981, 1982, 1983). Dispositional optimism is defined as an orientation towards the generalized expectation that good things will happen, and is construed as a stable personality characteristic with a high degree of trans-situational consistency and a wide range of applicability.

The Measurement of Optimism

There are three existing devices for measuring optimism: 1) The Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974); 2) the Generalized Expectancy for Success Scale (Fibel & Hale, 1978); and 3) the Life Orientation Test (Scheier & Carver, 1985).

The Hopelessness Scale. The Hopelessness Scale is designed to assess depressive affect and loss of motivation, in addition to generalized expectancies. Because it is geared more toward assessing variables affecting depression, than toward optimism per se, its use was rejected for purposes of the empirical study to follow.

The Generalized Expectancy for Success Scale. Expectancy judgments can range from very specific (e.g., "Can I finish this one last question?") to very general (e.g., "Do good things usually happen to me?"), and The Generalized Expectancy for Success Scale assesses people's expectations regarding outcomes in specific concrete behavioral domains (e.g., parenting, career, ...). Because of its specificity, this scale was rejected for use in the present study.

It is thought to be more profitable for purposes of the present study to measure a person's generalized outcome expectancies rather than expectancies that are specific in nature, because the kinds of problems encountered in every-day life often are very general in scope, or are multiply determined. In other cases, the person may have had no prior experience with the given stressor, or the stressful event may unfold over a

relatively long period of time such that generalized expectancies, rather than specific, may play a more important role in motivating behavior. Because most theorists on expectancy and self-control of behavior suggest that the best predictions are made when the expectancy in question matches the level of specificity of outcome (Scheier & Carver, 1987), the Generalized Expectancy for Success Scale was thought to be too task-oriented and role specific for purposes of the study to follow.

The Life Orientation Test (LOT). The final measure of optimism, and the one that was preferred for the empirical investigation to follow is the Life Orientation Test (LOT). The LOT consists of 12 self-report, 5-point Likert scale items responded to by indicating extent of agreement ranging from "strongly agree" (4) to "strongly disagree" (0). Four items are phrased in a positive way (e.g., "In uncertain times, I usually expect the best") and four items phrased negatively (e.g., "If something can go wrong for me, it will"). The final four items (2, 6, 7, 10) are filler items. The LOT is scored by reverse coding the negatively worded items (3, 8, 9, 12) and then summing items 1, 3, 4, 5, 8, 9, 11, and 12, to yield a single optimism score. Higher scores indicate a more optimistic outlook.

Psychometric properties of the scale suggest that this is a reasonably sound instrument (cf. Scheier & Carver, 1985). Factor analyses indicate that it measures a unidimensional concept as intended. Cronbach's alpha (.76) reveals adequate internal reliability; and test-retest reliability is good over a four week

(r=.79) and 13 week (r=.72) interval. Construct validity has been established by correlations in the theoretically appropriate direction (Scheier & Carver, 1985) with internal-external control (Rotter, 1966), self-esteem (Rosenberg, 1965), depression (Beck, 1967), hopelessness (Beck, Weissman, Lester, & Trexler, 1974), alienation (Maddi, Kobasa, & Hoover, 1979), and perceived stress (Cohen, Kamarck, & Mermelstein, 1983). Additionally, responses to the LOT have been reported to be independent of self-consciousness (Fenigstein, Scheier, & Buss, 1975), and social desirability (Crowne & Marlowe, 1964) influences.

Although the LOT has been used with cardiac patients (Scheier et al., 1986) and alcoholics (Stack et al., 1987), most prior research has been confined to samples of undergraduate university students. To the knowledge of the present author, the empirical investigation reported in this dissertation is the first to use the LOT with psychiatric patients. An examination of the individual items suggests that questions in this inventory are phrased in fairly simplistic terms, with unsophisticated vocabulary and simple grammatical structure. One specific question however (I'm a believer in the idea that "every cloud has a silver lining") requires the ability of abstract thinking, one area of cognitive functioning that is often compromised in psychiatric patients, particularly those with schizophrenia. In the empirical investigation to follow, either the present author or another research staff was typically available for assistance to subjects while they were completing the self-report

questionnaires, and it was very infrequently that subjects asked for clarification of any questionnaire item.

However, as published norms for this instrument are not available for psychiatric samples, a pilot study was conducted (see Chapter V) to establish the comparability of its usage in the empirical investigation to follow.

Since the LOT is the measure preferred for use in the empirical investigation to follow, the remainder of the literature review regarding optimism will focus primarily on findings involving the use of this particular questionnaire.

Optimism and Well-being

It has been repeatedly documented that an optimistic orientation ultimately has favourable implications with regard to health and illness (Reker & Wong, 1983; Scheier & Carver, 1985). Literature has begun to accumulate in the areas of both physical (Scheier et al., 1986) and mental health (Carver & Gaines, 1987) confirming the theory that dispositional optimism exerts a strong effect on well-being.

Reker and Wong (1983) for example, found that institutionalized and non-institutionalized elderly persons, initially assessed as optimistic, reported fewer physical symptoms and more positive physical, psychological, and general well-being at a two-year follow-up. Biases in self-reporting however, were not examined for in this study, and therefore it is unclear whether optimists actually had fewer symptoms, or merely reported fewer.

Scheier and Carver (1985), using the Life Orientation Test, confirmed the finding of a prospective relationship between optimism and symptom reporting in a group of college students coping with the very stressful final, four week period of an academic semester of study. In this study, optimism was significantly related to symptom reporting both at the outset of the study and four weeks later on the last day of classes. The prospective relationship between optimism and symptom reporting remained significant even after the association between these variables at the initial assessment time was partialled out.

To control for the possibility that sense of physical well-being predicted optimism over time, symptom reporting at Time 1 was correlated with optimism at Time 2, partialling out the effects of optimism at Time 1. The magnitude of the resulting partial correlation was near zero, indicating that the relationship between symptoms (at Time 1) and optimism (at Time 2) disappears completely when initial levels of optimism are partialled out. Hence, it was not the case that optimism resulted from initial low levels of symptomatology, but rather, that optimism predicted symptom reporting over time.

The possibility that optimists' levels of subjective symptom reporting reflects the fact that they merely "put on a happy face" rather than actually experiencing fewer symptoms was investigated in a study of patients recovering from coronary artery bypass surgery (Scheier, Matthews, Owens, Abbott, Lebfevre, & Carver, 1986). In this study, optimists were judged by members of a cardiac rehabilitation team as showing a

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significantly faster rate of recovery six to eight days post-operatively, and tended to reach objectively recorded "milestones of recovery" faster than pessimists. Additionally, optimists were less likely than pessimists to develop new Q waves on their EKG's (a sign of myocardial infarction) following surgery, and also were significantly less likely to have shown a clinically significant release of SGOT, a specific enzyme associated with general muscle damage that tends to be present in large amounts following myocardial infarction.

In sum, optimism exerted a strong and pervasive effect on patients' physical well-being both during and immediately following surgery such that optimists showed fewer signs of intraoperative complications and evidenced a faster recovery. Again, these relations held, even when the physical health status of patients prior to surgery was considered. In this study, optimists also reported being less hostile, less depressed, having a stronger base of social support, and greater satisfaction with work, and finally, a higher self-reported quality of life six months post-operatively.[3]

In a separate study (Carver & Gaines, 1987), optimists were found to be less susceptible to the development of post-partum

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[3] Scheier and Carver (1986) found that the observed relationship between hostility and health-related outcomes was the result of a relationship between hostility and optimism, with the latter variable accounting for the link to physical well-being. Similarly, it has been hypothesized (Scheier & Carver, 1987) that the health-related buffering effects of personality-based hardiness (Kobasa, 1979) reflect the underlying relation between hardiness and optimism, again, with optimism being responsible for the buffering effect.

depression than were pessimists, after statistically controlling for earlier levels of depressive symptoms.

In sum, several studies have successfully linked optimism to a number of positive health-relevant outcomes ranging from psychological symptomatology to quality of life to physical signs and symptoms.

Mechanism of Action: Optimism and Coping

One mechanism proposed to account for the observed relationship between optimism and health is that of coping processes. Research has generally borne out the assumption that expectancies function as determinants of behavior in situations such as dealing with specific fears (Carver, Blaney, & Scheier, 1979a), solving cognitive problems (Carver, Blaney, & Scheier, 1979b), and test anxiety (Carver, Peterson, Follansbee, & Scheier, 1983). Optimism has also been shown to be related to Lazarus and colleagues' (Coyne, Aldwin, & Lazarus, 1981; Folkman & Lazarus, 1980; Lazarus 1966; Lazarus & Folkman, 1984), model of transformational coping processes (Scheier et al., 1986; Scheier & Carver, 1987).

Lazarus has described two general ways that people cope with stressful circumstances: 1) problem-focused coping, which involves action with the objective of removing or circumventing stressful stimuli; and 2) emotion-focused coping, which involves the attempt to reduce or eliminate the emotional distress associated with stressful situations. Although it has been found that in most situations, people engage in a mixture of these two strategies, there is evidence that certain variables influence

which strategy will predominate (Folkman & Lazarus, 1980; McCrae, 1984). Problem-focused coping is most likely to be used where people believe that something constructive can be done, whereas emotion-focused coping is initiated when people believe the situation is one that must be endured.

According to Carver and Scheier's theoretical model of behavioral self-regulation (1981, 1983, 1985), dispositional optimism is seen to have implications for the manner in which people deal with the stresses of life. The central tenet of Carver and Scheier's theorizing is that people's actions are generally affected by their beliefs about the probable outcomes of those actions. Consistent with established findings in the more general area of coping research, it is thought that people who expect successful outcomes (i.e., optimists), continue to exert efforts at attaining those outcomes, even when doing so is difficult. Alternatively, if expectancies are sufficiently unfavourable, people reduce their efforts and eventually disengage themselves from further pursuit of the goals.

Since optimism is operationalized as the general expectancy for good outcomes, it follows that this should be associated with active problem-focused attempts to deal with stressors. Scheier et al. (1986) found that optimism was positively correlated with the use of problem-focused coping in a variety of stressful situations.

> " ... Optimists display coping patterns that involve continued positive striving and making the best of whatever situation they are confronting. Pessimists, in contrast, try to deny the stressor's reality, are preoccupied with their emotional distress, and tend to disengage from the goals with which the stressor is interfering. Stated more

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simply, and more starkly, when confronting adversity optimists keep trying, whereas pessimists are more likely to get upset and give up" (Scheier & Carver, 1987, p. 191).

These researchers also found that optimists used a strategy of acceptance/resignation, but did so only when the stressor was appraised as uncontrollable (Scheier et al., 1986).

On the basis of these results, Scheier and Carver (1987) conclude: "These coping-strategy differences may provide an explanation (at least in part) for the link that has been established between optimism and physical well-being" (p. 191).

Literature on coping and adaptational outcomes confirms that such a pattern of coping strategies produces more favourable outcomes in terms of psychological distress, long-term adjustment, and a variety of physical indices (e.g., Andreason & Norris, 1972; Averill & Rosenn, 1982; Barth, Schinke, & Maxwell, 1983; Cohen & Lazarus, 1973; Cohen & Roth, 1984; Felton, Revenson, & Hinrichsen, 1984; Ilfeld, 1980; Kobasa, 1982). Taken together, these findings suggest that optimism may confer a coping advantage not only when something can be done to deal with a stressful event, but also when the event must be accepted and to which the person must accommodate.

Consistent with these findings on optimism and coping, and also of direct relevance to the present study, is the finding that pessimists are less likely than optimists to successfully complete an aftercare program (i.e., stay abstinent) following treatment for alcoholism (r=.29; p<.05) (Stack, Carver, & Blaney, 1987). Dispositional optimism was a highly significant predictor of successful completion of the program even when the effects of

other variables were partialled out (r=.48). This finding of optimism is quite significant, given the fact that 50-90% of treated alcoholics will eventually relapse. The fact that optimism was related to relapse following treatment suggests that it may also have some utility with respect to predicting relapse (i.e., recidivism) among a broader psychiatric group.

Re-interpreting Other Findings: Hostility and Hardiness

Two other personality variables, hostility and hardiness, have also been linked to physical well-being in the psychological literature. Both of these, however, are marked by conceptual ambiguity and share a number of common features with optimism, and can be readily recast in terms of dispositional optimism (Scheier & Carver, 1987).

Hostility, popularly measured by the 50-item Cook-Medley Hostility Scale (1954) derived from the MMPI, has been implicated in several major health problems. The potent factor contributing to these findings is unclear as factor analysis reveals at least two separate factors (cynicism and paranoid alienation), neither of which explicitly defines a sense of hostility (Costa, Zonderman, McCrae, & Williams, 1986 as cited in Carver & Scheier, 1986). Additionally, this measure also correlates with several other personality characteristics and psychosocial measures such as negativity, depression, social support, and negative life events. As a result of considerations such as these, and an examination of individual Cook-Medley items, Scheier and Carver (1986) hypothesized that hostility scores might also be related to optimism, and further, that the health-related outcomes of the

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Cook-Medley Scale may have been due to its underlying relationship with optimism.

In testing this theory, they found that the association between "hostility" and physical symptoms ($r=.20$) became quite insignificant ($r=.08$) after the effects of optimism were partialled out, while the effect of optimism on health remained significant ($r=-.28$) when the relationship between hostility and optimism was removed (Scheier & Carver, 1986). These associations suggest that optimism was largely responsible for the relationship between physical symptoms and the Cook-Medley hostility scores. These cross-sectional findings were replicated in a prospective study, that again found the effects of hostility to be insignificant when optimism was partialled out (Scheier & Carver, 1986).

The second line of research involves personality-based hardiness, proposed by Kobasa in 1979. Conceptually, hardiness is thought to represent a composite of three dimensions - commitment, control, and challenge - and has been shown to buffer the illness-provoking effects of life stress in both retrospective (Kobasa, 1979) and prospective (Kobasa Maddi, & Kahn, 1982) studies.

Although Kobasa has reported significant intercorrelations between the three components of hardiness among male executives, supporting her notion of a composite disposition, other studies have failed to replicate this finding. Toth (1986) examined the relationship between hardiness and coping styles in a sample of university students, and found that the challenge component was

not significantly related to the other two dimensions of hardiness, nor was it related to any of the coping styles examined. Kobasa herself (1979), in a retrospective study, reported that on its own the challenge component does not significantly buffer the illness-provoking effects of life stress. Despite these findings, all of the hardiness dimensions are lumped together into a single composite index, allowing for increased reliability by virtue of a larger number of items, but also making it impossible to determine what aspect of this disposition is responsible for the effects obtained.

On the basis of these findings, it is reasonable to speculate that the potent dimensions of hardiness are internal control and commitment. Internal control, as will be discussed below, has been well established in many independent studies as a variable protecting health. Commitment, or alternatively alienation, has been shown to correlate significantly with optimism (Scheier & Carver, 1985).

Quite possibly then, as with hostility, the underlying relationship between hardiness and optimism is responsible in part for the observed buffering relation of the former variable (Scheier & Carver, 1987). Rhodewalt and Agustsdottir (1984) concluded that "... one aspect of the hardy individuals' stress resiliency is attributable to their propensity to interpret situations in less stressful ways" (p. 221), suggesting that an optimistic bias in the perception and evaluation of stressful life events contributes significantly to the observed buffering effect of hardiness.

The hypothesis that optimism and internal control, as opposed to hardiness, are responsible for the buffering effect on life stress, is yet to be tested empirically.

Locus of Control

Locus of control was first introduced in 1966 by Julian B. Rotter, and has since become one of the most influential concepts in psychology. Current Contents, a journal that records citations, reported that since Rotter's original monograph was first published in 1966 "there have been at least 4,700 citations to that monograph in the psychological and social science literature, a number far in excess of any other article in the psychological and social sciences for the same period of time" (Rotter, 1990, p. 492). This variable has been included in the present empirical investigation on the basis of its thoroughly documented, potent, and pervasive effect on a multitude of life situations, where it has been found to differentially affect health-related outcomes.

Internal-external locus of control (Rotter, 1975) is a construct that reflects an individual's attribution of the causation of a given outcome: "Internal control refers to the generalized expectancy that life experiences are contingent upon one's actions, whether those experiences are positive or negative ... [whereas] external control refers to generalized expectancies that life experiences are not contingent upon one's own behavior, but are determinable by a host of external causes - luck, fate, other people, or even perhaps invariant characteristics of one's

self, for example, beauty, or intelligence" (Lefcourt, 1980, p.210).

The Measurement of Locus of Control

Though numerous scales exist to measure locus of control, Rotter's Locus of Control scale is the most widely known in the area. In 1966, he published his 23 item measure, but emphasized that this was developed as a "broad guage instrument" which allowed for a low degree of prediction of behavior across a wide range of situations (Rotter, 1975). In line with this comment is the criticism of some (e.g., Mischel, 1968) that people are not entirely consistent across different situations and that characteristics including, but not restricted to, age and the specifics of the situation need to be taken into consideration when attempting to make predictions based on personality measures.

Despite Rotter's intention to measure a unidimensional construct, repeated factor analysis of his scale (e.g., Mirels, 1970) has revealed at least two factors, suggesting that Rotter's measure reflects beliefs in control in different situations.

Since this finding, there has been general agreement as to the multi-dimensionality of the construct, and a recognition of the need to develop specific Locus of Control scales to measure special aspects of the construct. Hence, the present trend is to use situation-specific devices that relate more directly to the population and/or situation at hand. The result is that at present, a multitude of scales to measure various aspects of the concept of locus of control in various populations and various

settings exist (e.g., Abbott, 1984; Duttweiler, 1984; Gutkin, Robbins, & Andrews, 1985; Kirscht, 1972; Levenson, 1974; Nowicki-Strickland, 1973; Reid & Ware, 1974; Tadmor & Hofman, 1985). Hence, the choice of which instrument to use in the empirical study to follow was determined by its specific relevance to pathological populations and their response to the treatment situation.

The Locus of Control of Behavior Scale (LCBS). The scale to be used in the following study is the Locus of Control of Behavior Scale (LCBS) (Craig, Franklin, & Andrews, 1984), which was designed to measure the extent to which subjects perceive responsibility for their personal problem behaviors. This measure was developed for the prediction of persons likely to relapse following apparently successful therapy.

The LCBS consists of 17 items in a 6-point Likert-type format, ranging from "strongly disagree" (0) to "strongly agree" (5). Half of the items are reversed in terms of internality in order to minimize the possible effect of social desirability in responding. The LCBS is scored by transposing items related to internality (1, 5, 7, 8, 13, 15, 16) and then summing the scores for all 17 items. High scores on the LCBS indicate externality.

The psychometric properties of the scale presented here were reported by Craig et al., (1984). Coefficient alpha for these 17 items is .79 indicating acceptable internal reliability. Principal components factor analysis completed on both university students and clinical samples revealed that all items load greater than .3 on the first factor. This factor accounts for

24% of the variance and is considered to be a general factor representing belief about control over personal behavior.

Test-retest reliability on non-clinical adult subjects was .90, and at a six month interval this correlation was .73 indicating acceptable stability of the personal construct over time in subjects not receiving treatment.

Construct validation of the LCBS was established by substantial correlations with Mirel's (1970) Factor 1 (perceived control over personal events) of the Rotter I-E Scale. Scores on the LCBS are also independent of age, sex, and social desirability as measured by the Marlowe-Crowne Social Desirability Scale. Lastly, the scale differentiates between normal and pathological samples. Chronic samples (neurotics and chronic stutterers) theoretically and empirically score higher on locus of control measures, indicating that they generally tend to feel that their problem behaviors are less under their control. In addition, changes on the LCBS between pre- and post-treatment in the direction of greater internality predicted relapse in a group of stutterers ten months after treatment. Neither the original Rotter scale or Mirel's Factor 1 items were able to accurately make this same prediction.

Though the authors of the LCBS have used it with different clinical samples (agoraphobics and stutterers), and non-clinical samples (nurses and university students), it has not yet been applied to psychiatric samples with more severe mental illnesses such as those in the empirical study to follow. Examination of the 17 items comprising this scale suggests that they are all

relatively concrete items in terms of subject matter. In addition, the vocabulary is generally unsophisticated. Based on these anecdotal observations, there is no obvious suggestion that persons with more serious mental illnesses would find these questions difficult to understand or answer in a meaningful way. As with the LOT, the comparablilty of its usage in the empirical investigation to follow was established in the pilot study reported in Chapter V.

Locus of Control and Well-being

Regardless of the specific measures used, numerous studies have demonstrated the beneficial effects of an internal locus of control (see Lefcourt, 1976; Lefcourt, 1980; Strickland, 1973 for reviews). On measures of both psychological distress (e.g., anxiety, depression) and physical illness, the presence of an internal locus of control has been found to significantly buffer the illness-provoking effects of life stress (e.g., Johnson & Sarason, 1978; Lefcourt, 1981; Schill, Ramaniah, & Toves, 1982; Witmer, Rich, Barcikowski, & Mague, 1983). Similar beneficial effects of an internal locus of control have been reported with respect to a variety of circumstances such as life satisfaction (Palmore & Luikart, 1972), perceived adjustment of severe accident victims (Bulman & Wortman, 1977), and prognosis of women with symptoms of cervical cancer (Schmale & Iker, 1966).

With respect to the present study, research on clinical samples has yielded similar findings. In a male psychiatric population, "internals" had a propensity to view the ward more positively in terms of variables such as emotional support,

encouragement of social interactions, and permitting more autonomy (Marone & Desiderato, 1982; Kish, Solberg, & Uecker, 1971). In the Kish et al. study, internals' mean length of hospitalization was 53 days as opposed to 1088 days for externals.

Other studies have looked more directly at the predictive relationship between locus of control measures and treatment outcomes. Simmons, Lustman, Wetzel, and Murphy (1985) found that individual differences among depressed patients on the Self-Control Schedule (Rosenbaum, 1980) interacted with type of therapy to influence eventual treatment response. These researchers found that for those who entered treatment with high levels of learned resourcefulness (analogous to an internal control orientation), cognitive therapy was most efficacous, while low resourceful patients benefitted most from pharmacotherapy.

Similarly, Abbott (1984) found that measures of locus of control had a significant interactive predictive relationship to treatment outcomes, measured as probability of relapse at one year, for 106 alcoholics completing an in-patient program. In this study, cognitively intact subjects scoring in the intermediate range on locus of control had the best outcomes. Among cognitively impaired subjects however, this finding was reversed, with extreme internals and externals having better outcomes.

Locus of control has also been found to predict persons likely to relapse following apparently successful therapy for stuttering (Craig, Franklin, & Andrews, 1984).

While there appear to be no published studies directly examining the relationship between locus of control and re-admission to hospital, Nuttall and Solomon (1965) found that a "social withdrawal" factor, including item clusters reflecting a "passive and indifferent orientation to life", had prognostic significance over a one-year follow-up period for male schizophrenics with respect to recidivism.

Mechanism of Action: Locus of Control and Coping

As with optimism, it is postulated that the beneficial effects of an internal locus of control are the result of its effect on transformational coping processes. With respect to cognitive appraisal of stressful situations, locus of control has been shown to have its largest effect in ambiguous situations where it functions as a dispositional factor, or a tendency to make certain attributions about control in many contexts. For example, in an ambiguous situation, a person with an internal locus of control is more likely to appraise the situation as controllable, while a person with an external locus of control is more likely to appraise the situation as uncontrollable (cf. Folkman, 1984). These cognitive appraisals in turn, dictate what, if any coping efforts are instated (Lazarus & Folkman, 1984).

A second way in which locus of control exerts an effect on the outcomes of stressful situations is through a direct effect

on chosen coping strategies. In a review of the literature,
Folkman (1984) concluded that an internal locus of control is
related to exertion and persistence in achievement situations.
Internals also tend to endorse "direct coping" more frequently
than externals, whereas externals endorse "suppression" and
"general coping strategies" (Parkes, 1984). More interesting,
however is that "internals perceive themselves as coping in a
manner potentially adaptive in relation to their appraisal of the
situation, but this is not true of externals" (Ibid, p. 665). As
previously mentioned, the literature on coping and adaptational
outcomes generally confirms that such a pattern of coping
strategies produces more favourable results on a variety of
physical and psychological outcome indices.

Interpersonal Dependency

Interpersonal dependency was chosen for inclusion in the
empirical study to follow on the basis of previous reports
linking it to well-being, as well as on theoretical grounds that
the move from institutional to community living represents a
dramatic shift from a passive, dependent role to one
necessitating greater independence and autonomy.

Interpersonal dependency refers to a "complex of thoughts,
beliefs, feelings, and behaviors which revolve around the need to
associate closely with, interact with, and rely upon valued other
people" (Hirschfeld, Klerman, Gough, Barrett, Korchin, & Chodoff,
1977, p. 610). This complex is an element in normal adult
personality structure, and is not in and of itself pathological.

The Measurement of Interpersonal Dependency

Despite extensive literature discussing the theoretical and clinical relevance of interpersonal dependency, relatively few self-report devices exist for assessing this personality characteristic (cf. Hirschfeld et al., 1977). Of the available measures, many are subscales of larger inventories (e.g., Edwards Personal Preference Schedule, Edwards, 1959; or the California Psychological Inventory, Gough, 1969), and some have serious problems in regard to reliability and/or response sets. Although the High Lands Dependency Questionnaire (Berg, 1974) is in keeping with conceptualizations adopted for the empirical study to follow, the use of this device is restricted to school-age subjects. For these reasons, the Interpersonal Dependency Inventory (IDI) (Hirschfeld et al., 1977) was chosen for use in the study to follow.

The Interpersonal Dependency Inventory. The IDI consists of 48 4-point Likert-type scale items indicating extent of agreement ranging from "very characteristic of me" (4) to "not characteristic of me" (1). These 48 items comprise three subscales: 1) Emotional Reliance on Another Person (18 items); 2) Lack of Social Self-Confidence (16 items); and 3) Assertion of Autonomy (14 items).

Items on the scale Emotional Reliance on Another Person reflect notions of attachment such as the wish for contact with and emotional support from specific other persons and the dread of loss of that person, and dependency such as a general wish for approval and attention from others. The second scale, Lack of Social Self-Confidence, expresses wishes for help in decision-

making, in social situations, and in taking initiative. Assertion of Autonomy, the third scale, asserts preferences for being alone, and for independent behavior, as well as the conviction that the subject's self-esteem does not depend on the approval of others. In each of these scales, the position of the self relative to others differs such that Scale 1 relates to a single other person, Scale 2 relates to people in general, and Scale 3 relates to indifference to the evaluation of others.

The IDI is scored by transposing negatively worded items (13, 24, 46) and then summing responses from items in each of the three sub-scales, yielding three separate scores. The authors of the scale also suggest the use of a fourth overall total score, as it is thought that interpersonal dependency should involve emotional attachment to others, doubts about one's capacity to function independently, and finally an element of repression or denial in regard to the extent of one's dependency on others. This scoring algorithm resulted from a regression combination setting dummy criterion weights for normals and patients, that is based on the assumption that psychiatric samples are, on the whole, more dependent than normal samples. Although raw score weights are provided for use in the overall dependency calculation, these assume a positive linear relationship between the level of dependency and that of pathology, which has yet to be empirically validated.

Psychometric properties of the scale are reported in Hirschfeld et al., (1977). Factor analysis of the IDI using both psychiatric patients and college students indicates three

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principal dimensions accounting for 49% of the total variance. Split-half reliabilities for the three sub-scales are .86, .76, and .84 for normal samples, and .85, .84, and .91 for psychiatric outpatients. Construct validity was established by correlations in the theoretically appropriate direction with neuroticism, depression, anxiety, and interpersonal sensitivity, and the need to describe oneself in a favourable way.

Unlike the LOT and the LCBS, the IDI has been validated and cross-validated with both normal, and psychiatric samples of various diagnoses (Hirschfeld et al., 1977; Hirschfeld et al., 1983). As this application has been empiricaly tested by other authors, its use with psychiatric samples was not at issue in the empirical investigation to follow.

Dependency and Well-Being

According to psychoanalytic theory of object relations, social learning theories, and the ethological theory of attachment, interpersonal dependency stems from the infant's initial reliance on the mother, and is a persistent and basic trait of human character. Although many theories discuss the role of dependency in infancy, relatively little has been written about how these qualities relate to the personality of the adult.

While dependency is known to be an element in the normal adult personality structure, an excess of interpersonal dependency is of considerable clinical relevance, and has been strongly implicated in the psychogenesis of depression, alcoholism, and other psychological and emotional disorders

(Chodoff, 1972; Feninchel, 1945, Hirschfeld, Klerman, Chodoff, Korchin, & Barrett, 1976).

One model of depression, for example, postulates that in persons prone to depression, the self-system differs from that of the normal adult personality by having greater interpersonal dependency needs and fragile self-esteem that depends to a great degree on the satisfaction of interpersonal dependency needs (cf. Hirschfeld et al., 1976). Research has confirmed that recovered depressives score higher on interpersonal dependency than do their relatives who have never been ill (Hirschfeld, et al., 1983).

Similarly, in geriatric populations, "numerous studies have documented that, on a long-term basis, continued dependency is detrimental to ... physical and psychological health" (Timko & Rodin, 1985, p. 101).

Although dependency would intuitively appear to be most relevant to adjustment following the relocation from institutional to independent living, studies in this area are relatively sparse.

Kinard (1981) interviewed 176 patients an average of one year post-discharge and found that 17.8 percent reported that they desired to return to the hospital because they preferred the controlled environment of the hospital to the community. Similarly, Spiegel and Keith-Spiegel (1969) interviewed 100 re-admitted male psychiatric patients and found that dependency issues were of central importance to the majority of respondents. For example, 67% indicated that various types of help were needed

from other people if they were to remain outside the hospital, yet less than 50% felt they could depend on anyone for help. Loneliness was also cited by over 10% of this group as being a main problem experienced upon discharge. On the basis of these studies, it would seem clear that discharged patients experience a strong need for support and assistance in the community, and that unmet dependency needs may be an important factor contributing to their ultimate re-admission.

It is unclear whether dependency needs are unsatisfied because of an absolute deficiency in available external supports, or because dependency needs are invested in too small a range of sources for satisfaction, and/or because certain of these individuals are excessively dependent on others. Some support for the latter of these hypotheses is the finding that psychiatric patients score significantly higher on the "emotional reliance on another person" and "lack of social self-confidence" components of interpersonal dependency, as compared to normals (Hirschfeld et al., 1977). It is likely that of discharged psychiatric patients, those who are less dependent on significant other(s) fare better in the community than those who are more or excessively reliant on others.

Summary

On theoretical as well as empirical grounds, personality is a significant variable in both the pathogenesis and progression of mental illness. It has been well documented that numerous personality dimensions have a powerful and prospective effect on

eventual health outcomes, given both the ordinary and extra-ordinary stresses of life.

Three specific personality dimensions, dispositional optimism, locus of control, and interpersonal dependency, have been selected for inclusion in the empirical investigation to follow. Each of these have a demonstrated potency in the area of health and illness, but have yet to be considered in relation to treatment outcomes following discharge from psychiatric hospital. It is this latter situation which will be explored in the present dissertation.

If not generally relevant to the prediction of rehospitalization, then perhaps the predictability of other variables would be enhanced if such factors were to be included as adjunctive or moderator variables. For certain sub-groups of individuals, personality factors may have a potent effect on success at community integration.

PART B

AN EMPIRICAL INVESTIGATION

CHAPTER IV

DEVELOPMENT OF THE STUDY

The Current Problem Defined

The preceeding literature review has outlined the evolution

of psychiatric treatments to the present, and identified problems

currently being investigated in the field. A brief summary of

these issues follows as they provide the rationale for the

present empirical investigation.

Deinstitutionalization and High Re-admission Rates

Recent decades have seen a trend in the treatment of the

chronically mentally ill towards shorter hospital stays with

continued treatment in the community through aftercare services.

Such "deinstitutionalization" of the chronically disabled

psychiatric patient has some serious limitations however. Most

notably, the "revolving door syndrome", whereby large numbers of

psychiatric patients are deprived of a stable environment by

being repeatedly re-admitted to hospital.

Prediction of Recidivism

Once the "revolving door" phenomenon had been identified,

researchers began to search for variables that were relevant to

the prediction of post-discharge adjustment, and its negative

form "recidivism", as a necessary first step towards a more

efficient and effective allocation of rehabilitative resources.

Though recent decades have seen intensive efforts directed

towards the isolation of variables predictive of recidivism, with

few exceptions, potent and reliable predictors have not been

identified. Of the vast array of available and potential predictors, two specific factors, aftercare services and personality, have been chosen for examination in the present empirical investigation.

Aftercare services. One promising line of research with regard to the problem of high re-admission rates, has focused on the type of aftercare patients receive upon discharge into the comunity. Here, the more innovative and comprehensive assertive outreach programs have demonstrated good success rates in terms of enabling patients to be maintained in the community, with far less utilization of repeated in-hospital treatments (Bond et al., 1988; Bond et al., 1989; Test, 1990; Test & Stein, 1980).

As these assertive outreach programs are based on the maintenance of close contact between case-managers and former patients of psychiatric institutions, they require low staff-to-client ratios, and hence the initial economic expenditure is quite high relative to standard community aftercare programs. Nonetheless, given the reduction in re-admission rates, these programs may be cost-beneficial over the longer term relative to hospitalization[4].

> "In their efforts to decrease recidivism, aftercare programs have been hampered by insufficient financial and manpower resources in providing services to all patients who are potential recidivists. However, some types of patients may benefit more from particular types of services than others, which suggests a need to match the patient to the program. Thus in maximizing the effectiveness of aftercare services, it is necessary to be able to predict high-risk

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[4] At present, there is a study being conducted at Riverview Hospital, British Columbia, designed to examine the relative economic costs of standard versus assertive case management aftercare over a two-year period.

patient groups and the types of aftercare services not likely to benefit each group " (Byers & Cohen, 1979, p. 327-328).

As with all therapies, costs associated with these assertive aftercare programs could theoretically be reduced by differentiating those individuals who require or would benefit from such intensive programs from those for whom such programs are either not necessary or not well-suited. Assertive aftercare programs could then be reserved for those individuals who would benefit maximally from this extended service.

As personality has demonstrated potency in other areas of health and well-being, it is suggested that personality may also be a useful variable in terms of matching patients to aftercare programs most optimally suited to them.

Personality. In addition to using personality as a means of "matching the patient to the program", this variable has potential in predicting recidivism per se. As noted in Chapter II, studies attempting to isolate predictors of recidivism have largely neglected the role of personality factors. Since personality is recognized as a potent contributor to well-being in many other life situations, it is reasonable to expect that personality factors influence the adjustment of chronic psychiatric patients in the community following institutional discharge. In addition, personality may interact with the type of aftercare treatment received to differentially affect outcomes in different treatment conditions.

The present empirical investigation represents a
contribution towards current endeavors designed to remedy the
problem of recidivism, by identifying factors relevant to the
prediction of rehospitalization. The empirical study to follow,
being conducted in conjunction with the Riverview Economic
Analysis study, is designed to investigate the role of
personality in relation to hospital re-admission over a follow-up
period of one year post-discharge.

Three specific personality factors (dispositional optimism,
locus of control, and interpersonal dependency) will be examined
in the context of prediction of re-admission to hospital. Also,
it is predicted that personality may interact with the nature of
aftercare service. Since this relates to the general need to
increase cost-efficiency of therapy programs by matching patients
and treatments, two treatment conditions (standard community
aftercare and assertive outreach) will be included in the design.

It is hypothesized that the specific personality variables
mentioned above may function as predictors of success in both
standard community-based and assertive case management aftercare
programs.

Identification of Measures Used

Personality Measures

For each of the three personality dimensions included in the
present study several self-report inventories exist. These were
reviewed in Chapter III of the Introduction; and the choice of
which specific measures to use in the present study was based on

both conceptual and psychometric considerations. As previously discussed, each of the personality dimensions will be measured by validated, established, self-report questionnaires. These questionnaires, which will serve as measures of optimism, locus of control, and dependency, respectively, are: the Life Orientation Test (Scheier & Carver, 1985), the Locus of Control of Behavior Scale (Craig, et al., 1984), and the Interpersonal Dependency Inventory (Hirschfeld et al., 1977).

Specific Research Hypotheses

On the basis of prior research findings with respect to the three personality variables chosen for study, the following specific hypotheses have been formulated:

1. Subjects scoring higher on the Life Orientation Test (i.e., more optimistic) will have superior post-discharge outcomes in terms of lower rates of recidivism than those scoring lower on the Life Orientation Test.

2. Subjects scoring lower on the Locus of Control of Behavior Scale (i.e., a more internal locus of control orientation) will have superior outcomes in terms of lower rates of recidivism than those scoring higher on the Locus of Control of Behavior Scale.

3. Subjects scoring in the less dependent direction on the Interpersonal Dependency Inventory subscales (i.e., lower scores on Emotional Reliance on Another Person, lower socres on Lack of Social Self-confidence, and higher scores on Assertion of Autonomy) will have superior outcomes in terms of lower rates of recidivism than those scoring in the more

dependent direction on the Interpersonal Dependency
Inventory subscales.

On the basis of current knowledge and theorizing regarding
the three personality variables chosen for inclusion in the
present study, it is difficult to make specific predictions with
respect to their relationship to differential outcomes in the
assertive outreach and standard community aftercare treatment
conditions. Of the three personality variables, dependency is
the one most likely to demonstrate an interaction with treatment
type, as such needs are differentially provided for in the two
aftercare programs included in the present study

Specifically, among those scoring in the direction of
greater dependency on the Interpersonal Dependency Inventory
subscales, those subjects in the assertive outreach program
should have superior outcomes (relative to subjects in the
standard community aftercare program) with respect to
rehospitalization status. It is reasonable to speculate that
such an interactive effect may be observed, as those with greater
dependency needs would more likely be able to successfully
negotiate the transition to independent living if provided with
the more extensive assistance of an assertive outreach worker.

Following this logic, for subjects scoring in the direction
of less dependency, differences in the experimental and control
conditions should be minimal, as the satisfaction of dependency
needs would be a less critical issue.

CHAPTER V

A PILOT STUDY:

NORMATIVE DATA ON THREE PERSONALITY MEASURES IN A SEVERELY ILL

PSYCHIATRIC POPULATION

Purpose

As most personality questionnaires are designed for use in "normal" populations, and research on the role of personality on mental illness is sparse, a preliminary study was conducted to establish normative data for the study population on the personality variables chosen for inclusion in the main study. This data was necessary in order to determine whether comparisons between the study sample and other populations that have been previously assessed using these measures could legitimately be made; and more basically, to ensure that the distribution of scores was adequate to employ these measures as predictors of outcome.

Method

Subjects

Subjects were 41 male and 9 female in-patient volunteers, ranging in age from 20 to 62 years. These subjects were obtained from six different wards at Riverview Hospital in British Columbia, and represent a range of patient types with respect to diagnosis and chronicity in terms of prior hospitalization history. However, as Riverview Hospital is a tertiary care facility, the population as a whole is generally considered to be quite ill. The majority have major mental illnesses, and carry a

diagnosis of Schizophrenia or one of the Major Affective Disorders. With the exception of gender composition, this sample is thought to be roughly representative of the subjects to be included in the main study.

Measures

The test battery given to all subjects contained three self-report questionnaires designed to measure optimism, locus of control, and dependency. As discussed in Chapter III of the Introduction, the Life Orientation Test was used as a measure of optimism; the Locus of Control of Behavior Scale was used to measure locus of control; and dependency was assessed using the Interpersonal Dependency Inventory. Copies of these questionnaires are included in Appendix C.

Procedure

Patients were contacted on the hospital wards where they were told about the general purpose of the investigation and the voluntary nature of participation. Those who were willing to participate were asked to fill out a questionnaire package that took approximately 45 minutes to complete. The questionnaires were administered immediately on the ward, and no remuneration was provided. This procedure was conducted by the author of this dissertation who supervised the completion of the questionnaires, with some assistance from ward nurses in terms of locating and contacting patients.

Data Analyses and Results

Descriptive statistics and correlations were produced for all central variables, and all analyses conducted using revised BMDP statistical software programs (University of California, 1983).

Representativeness of the Sample

A total of 50 patients agreed to complete the questionnaire package. The means and standard deviations for the total sample on the principal variables are presented in Table 2.

TABLE 2:
MEANS AND STANDARD DEVIATIONS of PRINCIPAL VARIABLES (N = 50)

VARIABLE NAME	MEAN	STANDARD DEVIATION
Age	34.60	10.57
Sex	1.18	0.39
Life Orientation Test	19.26	3.95
Locus of Control of Behavior Scale	43.57	11.13
Interpersonal Dependency Inventory	198.44	40.84
-Emotional reliance on another person	43.61	11.74
-Lack of social self-confidence	37.02	4.84
-Assertion of autonomy	30.02	6.72

The age range of the sample was 20-62 years, with a mean age of 34.60 years. Gender composition was 82% (n = 41) male and 18% (n = 9) female. This distribution of males and females is somewhat disproportionate relative to the greater population at Riverview Hospital which is 2:1 males:females (personal communication, Riverview Medical Records Department, May 29, 1989), but it reflects the distribution of males and females on the particular wards chosen for use in this pilot study. In the larger study to follow, the subject pool more closely resembled

the greater population with respect to gender composition, given that subjects included patients discharged from many different areas of Riverview as well as other hospitals.

Life Orientation Test

On the Life Orientation Test, subjects reported a slightly less optimistic outlook than has been reported by other researchers, but this would appear to be reasonable given the nature of the population. The mean score for the present sample was 19.26 (N = 50) as compared with means of 21.03 (n = 357) and 21.41 (n = 267) for male and female college undergraduates reported by Scheier and Carver (1985), and 26.83 (n = 54) for middle-aged males having just completed a program for the treatment of alcoholism (Strack et al., 1987). Likewise, the range of scores in the present sample is similar to that which has been reported in other samples, given the different population sizes. In the present sample, the standard deviation is 3.95 as compared with values ranging from 4.56 to 5.72 reported in the studies cited above.

Locus of Control of Behavior Scale

On the Locus of Control of Behavior Scale, subjects in the present pilot sample scored comparably to other clinical samples, in a slightly more external direction than normal non-clinical subjects. The mean score in the present sample of 32.57 (N = 50) is consistent with means of 39.4 (n = 69) and 31.0 (n = 70) reported for groups of agorophobics and stutterers respectively (Craig et al., 1984). Similarly, the standard deviation found with the present sample (11.13) is consistent with those reported

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for other clinical subjects (stutterers = 9.6; agorophobics = 11.2).

Interpersonal Dependency Inventory

On the Interpersonal Dependency Inventory, there are three separate subscales: Emotional Reliance on Another Person; Lack of Social Self-confidence; and Assertion of Autonomy. In addition, an overall Interpersonal Dependency score can be computed using raw scores on each of the three subscales in the following equation: 3(Emotional Reliance on Another Person) + 1(Lack of Social Self-confidence) + 1(Assertion of Autonomy) (Hirschfeld et al., 1977).

On overall Interpersonal Dependency, psychiatric samples score significantly higher than do normal subjects. Means for the former group are in the range of 210 (n = 180), and for normals, approximately 177 (n = 220) (Hirschfeld et al., 1977). Reported standard deviations are approximately 25 for normals and 35 for psychiatric samples (Hirschfeld et al., 1977). The present mean of 198.44 ($\underline{N}$ = 50) is consistent with these previous findings. The standard deviation of 40.84 obtained in the present study indicates a somewhat larger spread of scores than that observed in the Hirschfeld study. The reason for this slight discrepancy is unclear, though it may in part reflect sample differences with respect to psychiatric illness. However, in neither the present pilot study or in the Hirschfeld study were specific diagnoses recorded and analyzed, and so this possibility is difficult to verify.

Similarly, with regard to Emotional Reliance on Another Person, previous researchers have found that psychiatric patients tend to be significantly more emotionally reliant on others than are groups of normals. Means for these two groups respectively have been reported as 48.7 (n = 180) and 39.2 (n = 220) (Hirschfeld et al., 1977). A mean of 43.61 ($\underline{N}$ = 50) and a standard deviation of 11.74 are considered to be consistent with these prior findings (Standard deviation = 10.2 for psychiatric patients in the above cited study).

As with Interpersonal Dependency and emotional reliance, psychiatric patients tend to score higher than normals on Lack of Social Self-confidence. The mean for the present sample (37.02; $\underline{N}$ = 50) is similar to that found in other psychiatric samples (34.3; n = 180) (Hirschfeld, et al., 1977). Standard deviations for the above two samples are also comparable, being 4.84 in the present sample and 7.4 for the Hirschfeld et al., group. For normal samples, the mean is 30 and the standard deviation is 13 (Hirschfeld et al., 1977).

On Assertion of Autonomy, normals and psychiatric groups have been found to have similar scores, in the range of 30 (Hirschfeld et al., 1977). Results of the present pilot survey (mean = 30.02; $\underline{N}$ = 50) are also consistent with this finding, as are the standard deviations, being 6.72 in the present study, and 6.3 (n = 180) for psychiatric samples in the Hirschfeld et al., study.

Correlations Among Principal Variables

The correlations among principal variables are presented in Table 3.

TABLE 3:
CORRELATIONS AMONG PRINCIPAL VARIABLES (N = 50)

	2	3	4	5	6	7	8
1. Age	.29[b]	.09	.17	.07	.15	-.07	-.33[b]
2. Sex		-.18	-.02	-.25[a]	-.20	-.36[c]	-.33[b]
3. Life Orientation Test			-.31[b]	.27[a]	.29[b]	.22	-.08
4. Locus of Control of Behavior				-.03	-.02	-.03	-.04
5. Interpersonal Dependency					.98[a]	.80[a]	.32[b]
6. Emotional Reliance on Another Person						.71[a]	.13
7. Lack of Social Self-confidence							.41[d]
8. Assertion of Autonomy							

$$
\begin{aligned}
\text{a} &= p < .10 \\
\text{b} &= p < .05 \\
\text{c} &= p < .02 \\
\text{d} &= p < .01 \\
\text{* } &= p < .001
\end{aligned}
$$

Age. Age showed significant correlations with sex (r=.29; p<.05) and with Assertion of Autonomy (r=-.33; p<.05), indicating that in this pilot sample, younger subjects tended to be male and to report more Assertion of Autonomy than did older subjects. The common assumption that older people are more dependent than their younger counterparts was not supported, and in general, age was not significantly correlated with dependency.

Sex. Sex and age were significantly but modestly correlated reflecting the usual demographic observation that women live longer than men. Sex was significantly correlated with Lack of Social Self-confidence (r=-.36; p<.02), and Interpersonal Dependency (r=-.25; p<.10) indicating that males acknowledged a greater Lack of Social Self-confidence and greater Interpersonal

Dependency than did females. This finding is contrary to what might have been predicted on the basis of popular opinion. Hirschfeld et al., (1977) also found that females scored lower on Lack of Social Self-confidence, though in their research this trend was not significant. Whether this pattern is unique to the sample studied here, or applies more generally to more contemporary samples is not clear. Findings of the larger study to follow, also revealed a slight trend for males to score higher on these two scales, but as in the Hirschfeld study, these relationships were insignificant.

Personality measures. Scores on the Life Orientation Test were significantly correlated with Locus of Control of Behavior (r=-.31; p<.05), Emotional Reliance on Another Person (r=.29; p<.05), and Interpersonal Dependency (r=.27; p<.10) indicating that subjects scoring in the relative direction of optimism also scored in the direction of internal locus of control beliefs, greater Emotional Reliance on Another Person, and greater Interpersonal Dependency.

With respect to intercorrelations among subscales on the Interpersonal Dependency Inventory, that pattern observed here is essentially identical with that reported by Hirschfeld et al. (1977) for psychiatric samples. Scores on the Emotional Reliance on Another Person subscale were highly correlated with scores on the Lack of Social Self-confidence subscale (r=.71; p<<.001), indicating that those expressing wishes for attachment, emotional support, attention, and approval, also expressed wishes for help in decision-making, in social situations, and in taking

initiative. Lack of Social Self-confidence also correlated significantly with Assertion of Autonomy (r=.41; p<.01). This apparent contradiction suggests that while some subjects express wishes for help, they also tend to deny either dependency or attachment, to assert preferences for being alone and independent, and express the conviction that self-esteem does not depend on the approval of others. The Assertion of Autonomy subscale was not highly related to the Emotional Reliance on Another Person subscale.

The highest correlation was between overall Interpersonal Dependency and the Emotional Reliance on Another Person subscale, reflecting the large weighting given to the latter subscale in arriving at the composite score.

Conclusions

This pilot study was undertaken to establish normative data for the main study population on the personality measures of dispositional optimism, locus of control, and interpersonal dependency. Such information was required in order that comparisons between the study sample and other populations could legitimately be made, and more immediately, to ensure that score distributions were adequate to employ these measures as predictors of outcome.

In the existing normative data, psychiatric patients, as a group, tend to be somewhat less optimistic, more external in their locus of control beliefs, more emotionally reliant on others, more lacking in social self-confidence, and more interpersonally dependent than are groups of normal subjects. On

all three personality indices, normative data on the present pilot sample is similar to that previously reported.

Correlations among the principal variables in the present pilot study were such that females reported less Assertion of Autonomy and less Interpersonal Dependency than males, and males reported a greater Lack of Social Self-confidence than females. These sex differences had not been reported in prior published research on Interpersonal Dependency, and the implications of the present findings are not clear at this time. Those scoring higher on optimism also reported more internal locus of control beliefs, greater Emotional Reliance on Another Person, and greater Interpersonal Dependency. In terms of subscales of the Interpersonal Dependency Inventory, Emotional Reliance on Another Person was highly correlated with Lack of Social Self-confidence, and Lack of Social Self-confidence was also correlated with Assertion of Autonomy. This pattern of intercorrelations on dependency indices is virtually identical with that reported in the literature for psychiatric samples.

The normative data collected in the present preliminary study therefore supports the use of these measures as predictors of outcome for discharged psychiatric patients in the larger empirical investigation to follow.

CHAPTER VI

THE MAIN STUDY:

THE ROLE OF PERSONALITY IN THE PREDICTION OF PSYCHIATRIC

REHOSPITALIZATION

Purpose

This empirical investigation was conducted in order to assess the role of personality with respect to re-admission rates among a group of psychiatric patients. Three specific personality dimensions, dispositional optimism, locus of control, and interpersonal dependency, were examined in this context. In addition, as it was thought that personality may interact with post-discharge treatment regimes, assertive outreach and standard community aftercare treatment conditions were included in the research design.

Background

This study was carried out in conjunction with a study entitled "An Economic Analysis of British Columbia's Community Management Program", operating out of Riverview Hospital in British Columbia[5]. The latter study was designed to examine the relative economic costs associated with an assertive outreach program versus standard community aftercare treatment.

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[5] General information on the Riverview study has been exerpted from two sources: a research proposal document submitted by Riverview Hospital to National Health Research and Development Program, Health and Welfare Canada; and from a manual entitled "Community Management Program Evaluation: Assertive Outreach Program, Research Component".

The Riverview/Fraser Valley Assertive Outreach Program is a co-operative venture of Riverview Hospital and the Fraser Valley/North Shore Region Mental Health Centres, and will operate for two years as a demonstration project serving chronically mentally ill clients living in the Surrey and New Westminster catchment areas. The program is intended to reduce the rate of rehospitalization for a group of chronically mentally ill clients, and will be subjected to a detached evaluation of costs and benefits. The research evaluation of the project receives major funding from the federal government of Canada, and is under the direction of Dr. John Higenbottam, Vice President of Professional Services, Riverview Hospital.

Method

Subjects

Subjects were drawn from the Riverview Economic Analysis sample which consisted of 123 chronically mentally ill patients identified as being at high risk for rehospitalization, and residing in the catchment areas of the Surrey and New Westminster Mental Health Centres. The protocol used for client selection is detailed in Appendix A. The rationale for this protocol was directed towards selecting individuals on the basis of severity of illness, diagnosis, and psychiatric history and included patients who were considered to be a high risk for being rehospitalizated.

At the time of intake into the study, subjects were either in independent living situations or destined for such situations on discharge from hospital. (At the time of the original

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proposal for the present study, all subjects were to enter into the research project on the date of discharge from hospital. Administrative complications, and unforeseen events such as a protracted nurses' strike, rendered this proposition unmanageable, as it became difficult to locate eligible subjects. As a result of these unavoidable circumstances, it was necessary to broaden the recruitment strategy, and include subjects already established in independent living situations.) The inclusion criterion requiring "recent use of the mental health system", however, ensured that all subjects had been hospitalized at least once during the preceeding two years, and therefore had not been residing in independent situations for longer than this period. Hospitals from which subjects were drawn included Riverview Hospital, Royal Columbian Hospital, Surrey Memorial Hospital, and the Peach Arch District Hospital.

Subjects were randomly assigned, at the time of entry into the study, to either the assertive outreach program or standard comunity aftercare treatment conditions. Patients who refused participation were replaced by additional, randomly selected subjects. Sixty-three subjects received assertive outreach services and sixty subjects received regular aftercare services as provided by the Surrey and New Westminster Mental Health Centres.

As the number of previous admissions has been shown to predict rehospitalization with some degree of accuracy, this variable has been operationally defined and held constant for the two groups in the inclusion criteria, i.e., at least one

psychiatric admission within the past two years. Otherwise, a randomized rather than matched groups design was employed. This was a necessary consequence of the inability to construct meaningfully matched groups from this population because of the large number of potentially relevant variables (e.g. age, sex, diagnosis, medication, and employment status) that would have to be controlled.

Client participation in either the assertive outreach or control conditions was strictly voluntary and based on the informed consent of patients, obtained prior to participation (see Appendix B). Subjects were informed that all information obtained would be kept in the strictest confidence and used for research purposes only, and that the results of the research would in no way identify individual participants. Subjects were also instructed as to the voluntary nature of their participation, and that they were free to withdraw from the study at any time. A ten dollar honorarium was given to each subject by the Riverview Economic Analysis study for each interview sitting as required by their research; i.e., at study entry and at every six months post-intake.

Treatment Conditions

Two treatment conditions, as mentioned above, were included in the study design. Descriptions of these conditions are taken from the manual entitled "Community Management Program Evaluation: Assertive Outreach Program Research Component", pp. 1-2).

Assertive outreach. This treatment condition consisted of an assertive outreach program based on Bridge, a well known assertive outreach program in Chicago (Witheridge & Dincin, 1985). The Bridge Program has had dramatic results in reducing the rate of rehospitalization for high risk clients living in a difficult urban environment. Although based on Bridge, the present program has been modified to meet the particular requirements of clients living in the Surrey and New Westminster areas.

The significant features of assertive outreach employed in this study are:

a) mobile or "in-vivo" intervention, i.e. aftercare is taken to the location of the client rather than being clinic based;

b) the focus on preventing unnecessary hospital admission through the enhancement of community support and services;

c) a focus on all human needs, including recreational, vocational, social and personal needs;

d) advocacy for clients to assist in dealing with service boundaries and gaps;

e) early intervention in dealing with the small and large daily crises which tend to accumulate and lead to re-hospitalization;

f) the use of a total team approach where each assertive outreach staff member is familiar with each client;

g) the provision of long term rather than temporary support to clients;

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h) the use of low client:staff ratios to facilitate intensive contact.

Standard community aftercare. This treatment condition consisted of standard community aftercare as provided by the Surrey and New Westminster Mental Health Centres. In general, this type of aftercare treatment is based on the initiative of the client to maintain contact with the centre, and to arrive at the centre for weekly or monthly meetings and medication reviews.

Data Collection and General Procedure

Data collection was conducted by the present author with the assistance of two qualified senior nursing staff who had been relieved of their regular positions to serve as research staff for the Riverview Economic Analysis Study. A battery of clinical measures including the personality questionnaires and demographic profiles were administered to all subjects at the time of intake into the study. (The research intake date for outpatient clients was the date of randomization; the research intake date for inpatient clients was the separation date from hospital.) Sample copies of all measures used are included in Appendix C. Demographic information was cross-validated by corroborative reports obtained through interviews with significant others.

Lifetime hospitalization histories (prior to study intake) were collected for all subjects by reviewing records at over 20 general hospitals across the lower mainland of British Columbia, forensic institutions, and Riverview Hospital. Information on hospitalizations occurring outside of this area was obtained through cross-references in hospital charts, self-reports, and

interviews with significant others. This information was corroborated by obtaining hospital records from these hospitals across Canada.

Subjects were "tracked" from their date of study entry and rehospitalization statistics were collected for a follow-up period of one year from the date of study entry for all subjects.

As it was impossible to conduct a blind study of this magnitude, every effort was made to minimize biases through proper education and awareness of staff, and through clear guidelines being established for hospitalizaion and discharge conditions. In addition, all measures used at the time of intake were self-report, and therefore, the effects of experimenter bias were even further reduced. The only exception to this was hospitalization information which was obtained through chart reviews, and demographic data which was obtained through interviews with subjects, and then corroborated by other, independent sources.

Definition and Measurement of Clinical Variables

A battery of three self-report personality measures was administered to all subjects at the time of intake. As time permitted, subjects completed these inventories while the present author of one of the research staff was present. In some cases, the questionnaires were left with subjects for completion, and were then collected at a later date. The battery was estimated to take approximately one hour for completion and consisted of: 1) the Life Orientation Test (LOT) (Scheier & Carver, 1985), a measure of dispositional optimism, or a generalized expectation

that good things will happen; 2) The Locus of Control of Behavior Scale (LCB) (Craig et al., 1984), a measure of an individual's tendency to ascribe either personal (internal) or environmental (external) determinants to a given outcome; and 3) the Interpersonal Dependency Inventory (IDI) (Hirschfeld et al., 1977), measuring a complex of thoughts, beliefs, feelings, and behaviors revolving around needs to associate closely with valued other people. Each of these measures were discussed in detail in Chapter III of the Introduction.

Data Analyses and Results

All analyses were conducted using BMDP (PC-90) 1990 revision statistical software programs (University of California, 1990).

Description of the Sample

Sample size. A total of 123 psychiatric patients (Riverview's Economic Analysis sample) were contacted and asked to participate in the present study, which required the completion of the personality questionnaire package in addition to allowing access to information obtained for purposes of the larger economic study including demographic data, hospitalization histories, and follow-up rehospitalization statistics. Of this group, 101 consented to participate in the present study.

A series of analyses was done to determine the association between subjects' participation in the present study and other subject characteristics, in order to ensure that subjects participating in the present study (n=101) did not differ from those who refused such participation (n=22). The results of these analyses are presented in Table 4.

COMPARISON OF PARTICIPANTS AND REFUSERS (N=123)

INTERVAL VARIABLE NAMES	t	df	p	Participants (n=101) mean	std dev	Refusers (n=22) mean	std dev
Age	0.05	34	.96	37.62	11.41	37.50	10.10
Number of Children	3.71	72	.00	1.11	1.44	.36	.66
Hospitalization History	1.49	26	.15	2.68	1.09	3.18	1.50

NOMINAL VARIABLE NAMES	Chi^2	df	p	Participants (n=101) Frequency	Refusers (n=22) Frequency
Sex	2.11	1	.15		
Male				47	14
Female				54	8
Marital Status	5.01	6	.54		
Single				49	16
Divorced				25	3
Widowed				4	0
Separated				7	1
Married				12	2
Common Law				3	0
Unknown				1	0
Education	10.81	10	.37		
< 8 years				5	1
Grade 8				8	5
Some High School				26	4
Other Pre-High School				6	0
High School Graduation				21	4
Some Vocational				11	1
Vocational Graduation				9	1
Some University				11	4
College Graduation				2	0
University Graduation				2	2
Children?	2.47	1	.12		
Yes				46	6
No				55	16
Family Involvement	.83	4	.93		
Nearby & Involved				81	18
Not Nearby & Involved				6	1
Nearby & Unknown Involvement				2	1
Not Nearby or Involved				12	2
Axis I (1°) Diagnosis	1.25	4	.87		
Schizophrenia				59	15
Mood Disorders				35	6
Anxiety Disorders				4	1
Adjustment Disorders				2	0
Substance Use Disorders				1	0

TABLE 4 CONTINUED:
COMPARISON OF PARTICIPANTS AND REFUSERS (N=123)

NOMINAL VARIABLE NAMES	Chi^2	df	p	Participants (n=101) Frequency	Refusers (n=22) Frequency
Axis I (2°) Diagnosis	.24	1	.62		
Anxiety Disorders				1	0
Substance Use Disorders				4	1
Axis II Diagnosis	5.63	8	.69		
Anxiety Disorders				2	0
Sexual Disorders				1	0
Adjustment Disorders				1	0
Personality Disorders				36	5
Mental Retardation				1	1
Substance Use Disorders				5	1
Miscelllaneous Problems				2	0
Diagnosis Deferred				8	3
No Diagnosis				25	9
Group	1.14	1	.29		
Control				47	13
Experimental				54	9

For interval variables (age, number of children, and hospitalization history) t tests comparing means of independent groups under heteroskedastic conditions with the Welch-Satterthwaite degrees of freedom were done. On these tests, the only difference between patients who participated and patients who refused was on the variable "number of children" (t=3.71, p=.00, df=72), where participants tended to have more children (mean=1.11) than refusers (mean=.36).

For nominal variables (sex, marital status, education, children, family proximity and involvement, DSM-III-R Axis I Primary Diagnosis, DSM-III-R Axis I Secondary Diagnosis, DSM-III-R Axis II Diagnosis, and group) Pearson Chi Square Analyses were done. On these variables, there were no significant differences between participants and refusers.

Of the 101 personality questionnaire packages completed, three were excluded from all further analyses because of either a large number of missing items (2 questionnaires), or a series of invalid responses (1 questionnaire). Exclusion of these three questionnaire packages resulted in a usable sample size of 98 subjects. An additional four subjects were not included in further analyses as two withdrew early on in the research and two died (one suicide and one "accidental" death) before the one-year follow-up period had elapsed. These deletions resulted in a final sample size of 94.

Demographic characteristics. Summary demographic data on age, sex, education, marital status, number of children, family involvement, and hospitalization history in the final sample are presented in Table 5. (See Table 4 for a detailed breakdown of these values.)

TABLE 5:
DEMOGRAPHIC INFORMATION (N=94)

VARIABLE NAME	RANGE	MEAN	STANDARD DEVIATION
Age	19 - 65 years	37.19	11.20
Sex	1(male) - 2(female)	1.53	0.50
Education	1(< 8 yrs) - 11(univ-grad)	5.74	2.30
Marital Status	0(unknown) - 6(common law)	2.17	1.56
Number of Children	0 - 5	1.11	1.44
Family Involvement	1(uninvolved) - 4(involved)	1.44	1.01
Hospitalization History	1 - 42	8.13	7.22

The mean age of the sample was 37.19 years. The sample was composed of 47% males (n=44) and 53% females (n=50). The average level of education obtained was graduation from high school, with 44% of the sample (n=41) not having completed high school and 55%

(n=52) having graduated from high school. Most subjects were either single (48%), or divorced (25%). A total of 14 (15%) were either married or living in common law situations, 7% were separated, and four subjects had been widowed. (Marital status was coded as "unknown" for one subject because of discrepancies between the patient's report and those of corroborative sources). Of the total sample, 54% (n=51) did not have any children. Of those who had children (n=43), the average number of children was one. Regarding the family's involvement, 80% of the sample had family living nearby who were involved with them. For the remainder of the sample, their families were not involved. The number of prior hospitalizations ranged from one to 42 with a mean of 8.13 prior hospitalizations.

Patient status and diagnoses. Of the total usable sample, 14 subjects completed the personality questionnaires as in-patients and 80 completed the questionnaires as out-patients.

DSM-III-R (APA, 1987) primary and secondary Axis I diagnoses as well as Axis II diagnoses were obtained from current medical records for all subjects, and had been established by the physician responsible for each patient's care. The frequencies of these diagnoses are listed in Table 6. With regard to Primary Axis I diagnoses, the majority of subjects were labelled schizophrenic (57%), while another 35% were diagnosed as suffering from an affective disorder. The remaining 8% of the sample had anxiety disorders, adjustment disorders, and substance use disorders. With regard to a secondary Axis I diagnosis, 95% of the total sample received no label.

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On Axis II diagnoses, 36% received a personality disorder diagnosis. Other Axis II diagnoses included anxiety disorders, sexual disorders, mental retardation, substance use disorders, and miscellaneous problems. Of these, several are not technically considered to be Axis II, but rather, Axis I diagnoses. This incorrect usage of DSM-III-R protocol is interesting to note, and renders the interpretation of the significance of these diagnoses very difficult. Whether they were intended to denote diagnoses of secondary import, or alternatively, diagnoses of major consideration is unclear.

TABLE 6:
DSM-III-R DIAGNOSES (N=94)

DIAGNOSTIC LABEL	AXIS I PRIMARY		AXIS I SECONDARY		AXIS II	
	COUNT	%	COUNT	%	COUNT	%
Schizophrenia	54	57.4	0	0.0	0	0.0
Affective Disorder	33	35.1	0	0.0	0	0.0
Anxiety disorder	4	4.3	1	1.0	2	2.1
Sexual disorder	0	0.0	0	0.0	1	1.1
Adjustment disorder	2	2.1	0	0.0	0	0.0
Personality disorder	0	0.0	0	0.0	34	36.2
Mental Retardation	0	0.0	0	0.0	1	1.1
Substance use disorder	1	1.1	4	4.3	5	5.3
Misc. problems	0	0.0	0	0.0	2	2.1
No diagnosis	0	0.0	89	94.7	49	52.1

Assignment of aftercare treatments. Of the total usable sample, 43 (46%) were randomly assigned to standard community aftercare and 51 (54%) were assigned to the assertive outreach program at intake.

That the assignment of subjects into groups was truly random is evidenced in the fact that the multiple (adjusted) R^2 for

"group" is -.03 when group is used as a dependent variable and all other independent variables are included in a regression equation. This indicates that group membership is effectively unrelated to the other variables, and that groups are essentially indistinguishable on the basis of all other predictors. Subjects in the experimental and control groups were effectively matched on all other independent variables.

Regarding aftercare, at the time of completion of the personality questionnaires 52% (n=49) were assigned to the Surrey Mental Health Centre, and 46% (n=43) were assigned to the New Westminster Mental Health Centre. The remaining 2% (n=2) had relocated to other catchment areas in the province and were assigned to "other" mental health centres.

Dates of Hospital Discharge, Subject Entry (Intake), and Personality Questionnaire Completion

According to the original proposal, the research design of the present study was that subjects were to enter the study (i.e., intake date) at the time of discharge from hospital, which also was to be when the personality questionnaire packages were to be completed. However, due to unforseen complications that were unavoidable and uncontrollable (i.e. a nurses' strike) this design protocol was not followed consistently for all subjects. As a result, the time lags between these three events (hospital discharge, intake, and personality questionnaire completion) had to be incorporated in the data analysis as they presented additional factors that could influence the prediction of outcome variables.

The first problem arising from the above situation is that the follow-up study time was measured as one year from date of intake which was to represent one year from date of last (pre-study) hospital discharge. This design feature was to ensure that all subjects were matched in terms of study period with respect to last hospital discharge. However, as discharge and intake dates were not co-incident, the effective "study period" was not one year for all subjects.

The time lag in months between last hospital discharge and intake date ranged from zero to 27 months, with a mean value of 1.5 months. This means that, on average, subjects' last hospital discharge date (pre-study) was approximately one and a half months prior to their date of study entry. A further breakdown of these statistics is as follows: 36 subjects were discharged within one month prior to intake; 34 subjects were discharged between one and six months prior to intake; 12 subjects were discharged between six and 12 months prior to intake; and 12 subjects were discharged between one year and 26 months prior to intake.

The reason that the original proposal was not followed was that the recruitment of subjects based on the original inclusion criteria became increasingly difficult over time as a result of a protracted nurses' strike that resulted in patients not being regularly discharged to the community. For this reason, a change was deemed necessary by directors of the broader Riverview Economic Analysis study such that the protocol for subject selection was broadened so that the inclusion criteria could be

satisfied by one long-stay (45 days minimum) psychiatric hospitalization (in conjunction with other diagnostic and chronicity criteria) within two years of intake.

Although one solution to this problem would be to adjust follow-up dates and track subjects for one year from the date of last hospital discharge (as opposed to intake date), this was not a possibility as several subjects had been residing in the community for a year or longer at the time they were entered into the study. This being the case, the only feasible option was to include "lag time in months between discharge and intake" as a predictor variable, in order to account for this variation.

A second deviation in proposed design was that it was not possible to administer all the personality questionnaire packages at the time of the intake assessment. Although subjects entered the Riverview Economic Analysis study between May of 1989 and July of 1990, collection of the personality questionnaire data was not completed until February of 1991.

The range of time difference between intake date and completion of the personality questionnaire package was between -1 month and 20 months, with the mean time between intake and questionnaire completion being 3.8 months. (Negative values - 9 in total- represent subjects for whom the initial research evaluation was completed while they were still hospitalized, in anticipation of their forthcoming discharge.)

The deviation in time of personality questionnaire administration created another variable with the potential for influencing the prediction of outcome. Although the personality

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data was to be collected for all subjects at the date of hospital discharge, only 28 subjects completed the questionnaires within one month of hospital discharge. A further 25 subjects completed the questionnaire package between one and six months post-discharge, 13 did so between six and 12 months post-discharge, 21 did so between one and two years post-discharge, and seven subjects completed the questionnaire package between 25 and 34 months post-discharge. The mean lag time between last hospital discharge and personality questionnaire completion was 8.85 months. As a result of this deviation in design, the variable "lag time in months between last hospital discharge and completion of the personality questionnaire package" was also included in the analyses.

Estimation of Missing Data

Missing data patterns and estimates for missing values on the personality questionnaires were obtained using the statistical program "AM: Description and Estimation of Missing Data" (BMDP PC-90). On the Life Orientation Test, one item was missing for each of four subjects; on the Locus of Control of Behavior Scale, six subjects had missing data (10 items in total); and on the Interpersonal Dependency Inventory, eight subjects had missing data (12 items in total). Each of these missing items (26 in total) was replaced with acceptable values as generated by the "Two-Step" method for missing data estimation.

Scores on the Personality Questionnaires

The distribution of scores on the three personality inventories -- the Life Orientation Test (LOT), the Locus of Control of Behavior Scale (LCBS), and the Interpersonal Dependency Inventory (IDI) -- are included in Table 7.

TABLE 7:
DISTRIBUTION OF SCORES ON THREE PERSONALITY INVENTORIES (N=94)

Personality Inventory	Minimum	Maximum	Mean	Standard Deviation
LOT	1.0	32.0	17.46	6.32
LCBS	4.0	63.0	33.40	11.80
IDI	122.0	285.0	201.26	35.87
IDI Subscales:				
Emotional Reliance[1]	24.0	69.0	45.66	10.85
Self-Confidence[2]	28.0	49.0	37.24	4.50
Autonomy[3]	16.0	46.0	27.03	6.28

[1] Emotional Reliance on Another Person
[2] Lack of Social Self-Confidence
[3] Assertion of Autonomy

The Life Orientation Test. On the Life Orientation test, subjects reported a less optimistic outlook than that reported by other researchers (Scheier & Carver, 1985; Strack, et al., 1987), a finding consistent with the results of the pilot study in this dissertation. However, considering the nature of the present sample with regard to severity and chronicity of illness (as compared with college undergraduates and recovered alcoholics used in the studies previously cited), this observed discrepancy would appear to be reasonable. The range of scores observed in the present study was similar to those reported by other researchers (see citations above), and those obtained in the earlier pilot study using a similar psychiatric sample.

The Locus of Control of Behavior Scale. Scores observed in
the present sample on the locus of control measure (mean=33.40)
are highly consistent with those obtained in the pilot study
(mean=32.57), and fall between those observed for stutterers and
agorophobics (Craig et al., 1984), in a slightly more external
direction than normals. The standard deviation in the present
sample (11.80) is also consistent with that reported in the
literature for clinical samples (11.20 for agoraphobics).

The Interpersonal Dependency Inventory. On overall
Interpersonal Dependency, psychiatric patients are known to score
higher than normals: in the range of 200 as compared with normal
subjects who score in the 170 range (Hirschfeld et al., 1977).
As in the pilot study, this result was also observed in the
present sample. The standard deviation is similar to that
reported in the literature (Hirschfeld et al., 1977).
Psychiatric patients have also been found to score higher on
Emotional Reliance on Another Person as compared with normals.
The findings of the present study are highly consistent with
prior observations on this subscale (cf. Hirschfeld et al.,
1977). Means and standard deviations for the present sample on
the Lack of Social Self-Confidence subscale are also highly
consistent with those reported by others, and again, psychiatric
patients score higher than normals. Normals and psychiatric
patients have been found to score similarly on the Assertion of
Autonomy subscale, in the range of 30 (Hirschfeld et al., 1977).
The present results are consistent with these reported
observations.

Rehospitalization Statistics

As rehospitalization data was collected in the form of admission dates and discharge dates, this variable can be quantified in a number of ways, including whether or not a rehospitalization occurred, the number of rehospitalizations, and/or the number of days rehospitalized. In addition, as length of admissions ranged from 0 days to 137 days, re-admissions can be grouped and counted on the basis of duration of each rehospitalization.

In examining the raw rehospitalization data, it was apparent that many hospitalizations were of zero days duration (i.e., the patient was admitted and discharged on the same day). For this reason, the summary statistic "number of rehospitalizations greater than or equal to one day" was calculated, necessitating at least an overnight stay to qualify for a hospitalization. In addition, it was thought that rehospitalizations of a few single days were likely of a very different nature than admissions necessitating a longer hospital stay. On this basis, the variable, "number of rehospitalizations greater than seven days" was also calculated.

Of these different quantifications, six dependent variables were originally considered: 1) Rehospitalized Yes/No; 2) Number of rehospitalizations; 3) Number of rehospitalizations of duration greater than or equal to one day; 4) Number of Rehospitalizations of duration greater than seven days; 5) Total number of days rehospitalized; and 6) Days spent in hospital Yes/No. However, three of these were not included in subsequent

analyses because their predictability was generally very low (i.e., < 8%). The three dependent variables retained for subsequent analyses were: 1) Rehospitalized Yes/No, 2) Number of rehospitalizations, and 3) Number of rehospitalizations of duration greater than or equal to one day.

The descriptive rehospitalization statistics for the dependent variables retained for subsequent analyses are presented in Table 8 for the total sample (N=94).

TABLE 8:
REHOSPITALIZATION STATISTICS FOR THE TOTAL SAMPLE (N=94)

Variable Name	Freq.	%	Mean	Standard Deviation
Rehospitalized?			.48	.50
Yes = 1.	45	48		
No = 0.	49	52		
# Rehospitalizations:			1.87	3.48
0	49	52		
1	12	13		
2	8	9		
3	5	5		
4	10	11		
6	4	4		
7	2	2		
8	1	1		
9	1	1		
12	1	1		
26	1	1		
# Rehospitalizations > or = 1 Day:			.87	1.43
0	59	63		
1	12	13		
2	11	12		
3	5	5		
4	4	4		
5	1	1		
6	2	2		

As can be seen in Table 8, 48% of the total sample was rehospitalized at least once during the one-year follow-up

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period. The number of rehospitalizations for the total sample ranged from zero to 26, with a mean number of rehospitalizations of 1.87. When the number of rehospitalizations was calculated on the basis of "duration greater than or equal to one day", approximately 37% of the total sample had been rehospitalized at least once over the follow-up period.

Relationship Between Personality Scores and Rehospitalization Status

Correlations examining the relationship between personality scores and rehospitalization status were computed for each of the personality inventories and each of the rehospitalization measures. The results of these analyses are presented in Table 9.

TABLE 9:
CORRELATIONS BETWEEN PERSONALITY SCORES AND REHOSPITALIZATION STATISTICS (N=94)

	OPT[1]	LOCB[2]	EMOREL[3]	LSOSELCON[4]	AUT[5]	IDI[6]
REHOSPYN[7]	.02	.04	.11	.03	.19	.13
#REHOSPS[8]	.08	-.09	.00	-.02	.15	.03
#REHOS≥1[9]	-.00	.02	.04	-.05	.06	.04

[1] Optimism
[2] Locus of Control of Behavior
[3] Emotional Reliance on Another Person
[4] Lack of Social Self Confidence
[5] Autonomy
[6] Interpersonal Dependency
[7] Rehospitalized? (Y N)
[8] # Rehospitalizations
[9] # Rehospitalizations > or = 1 Day

Correlations examining the relationship between scores on the personality inventories and the rehospitalization statistics indicate that, contrary to a priori hypotheses, there are no

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significant relationships between any of the personality scores
and any of the rehospitalization statistics.

Relationship Between Aftercare Services (group) and
Rehospitalization Status

Descriptive statistics. Rehospitalization statistics for
the two treatment groups are presented in Table 10.

TABLE 10:
REHOSPITALIZATION STATISTICS FOR TREATMENT GROUPS

Variable Name	Assertive Outreach (n=51)				Standard Community Aftercare (n=43)			
	Freq.	%	Mean	Std. Dev.	Freq.	%	Mean	Std. Dev.
Rehospitalized?			.49	.50			.47	.50
Yes = 1.	25	49			20	47		
No = 0.	26	51			23	54		
# Rehospitalizations:			2.06	4.01			1.65	2.75
0	26	51			23	54		
1	5	10			7	16		
2	4	8			4	9		
3	3	6			2	5		
4	9	18			1	2		
6	2	4			2	5		
7	0	0			2	5		
8	0	0			1	2		
9	1	2			0	0		
12	0	0			1	2		
26	1	2			0	0		
# Rehosps. > or = 1 Day:			1.00	1.40			.73	1.47
0	29	57			30	70		
1	6	12			6	14		
2	9	18			2	5		
3	2	4			3	7		
4	4	8			0	0		
5	1	2			0	0		
6	0	0			2	5		

Upon visual scanning of the data, there do not appear to be
any large differences with respect to having been rehospitalized

during the one-year follow-up period (assertive outreach = 49%; standard community aftercare = 47%), or with respect to the total number of rehospitalizations (mean # rehospitalizations for assertive outreach = 2.06; mean # rehospitalization for standard community aftercare = 1.65). Similarly, on the variable where duration of hospital stay (i.e., greater than or equal to one day) was a factor, only a small difference is apparent (mean # rehospitalizations for assertive outreach = 1.00; mean # rehospitalizations for standard community aftercare = .47).

Tests were done in order to determine if the observed rehospitalization statistics for the assertive outreach and standard community aftercare groups (Table 10) differed significantly. The results of these analyses are presented in Table 11.

TABLE 11:
COMPARISON OF TREATMENT GROUPS ON REHOSPITALIZATION STATISTICS
(N=94)

Variable Name	t	p-Value	DF
# Rehospitalizations	0.56	.57	92
# Rehospitalizations $\geq$ 1 Day	0.94	.35	92
	Chi^2	p-Value	DF
Rehospitalized? (Y N)	0.06	.81	1

On the basis of these tests, there do not appear to be any significant differences between the assertive outreach and standard community aftercare treatment groups on any of the rehospitalization statistics examined (i.e., all ps > .35).

Prediction of Rehospitalization Status

Transformation of original variables. As all analyses

subsequent to those already presented required the use of either

dichotomous or interval variables, several transformations of

both independent and dependent variables were necessary in order

to employ all of the information obtained in the prediction of

follow-up rehospitalization status.

1) Independent variables. All demographic information was

included as each of these variables represented potential

predictors of rehospitalization status. Dichotomous variables

(sex, group (treatment), children - yes or no -, status -

inpatient or outpatient -) and interval variables with roughly

normal distributions (age, and number of children) were used in

their original form as predictor variables.

The only exception here was hospitalization history, which

was used in its square root form in order to reduce the extreme

skewness and kurtosis on this variable, and reduce the leverage

of an extreme point. The problem with this variable in its

original form was one outlying subject who had 42 prior

hospitalizations, when the rest of the sample was distributed

between one and 26 prior admissions.

All nominal variables (marital status, education, family

involvement, mental health centre, and DSM-III-R Axis I primary

diagnosis) were transformed to dichotomous variables. For

marital status, the independent variable used was "married" (yes

or no) which was obtained by collapsing the categories "single",

"divorced", "separated", "widowed", and "unknown" (n=1) into

"married - no", and the categories "married" and "common-law" into "married - yes". Education was transformed by collapsing categories into "yes" or "no" with respect to graduation from high school. Similarly, family involvement became dichotomous by collapsing categories into "yes" and "no" on the basis of known involvement between the family and the subject, regardless of the proximity of location between these two. Mental health centre was recoded so that the two subjects assigned to "other" received scores of 1.5 because it was equidistant between the values for New Westminster (1) and Surrey (2). This number was also close to the mean of 1.53 for this variable.

With respect to DSM-III-R diagnoses, on Axis I (primary diagnosis) 92.5% of the sample had either a schizophrenic (57.4%) or an affective disorder (35.1%) diagnosis. For this reason, Axis I primary diagnosis was recorded as "schizophrenia" (yes or no) and "mood disorder" (yes or no). With regard to secondary Axis I diagnoses, 94.7% of the sample received no diagnosis, rendering this variable unusable. The diagnoses coded on Axis II were also not included in further analyses as this category was inappropriately used in 11% of cases by assigning Axis I diagnoses, and another 52.1% of subjects received no diagnosis.

Raw summary scores for each of the personality variables were used. This included a total optimism score (LOT) obtained on the Life Orientation Test, and a total locus of control score (LOCB) as obtained on the Locus of Control of Behavior Scale. On the Interpersonal Dependency Inventory, summary socres obtained on the subscales were used: Emotional Reliance on Another Person

(EMOREL), Lack of Social Self-Confidence (LSOSELCON), and Assertion of Autonomy (AUT). The overall dependency score suggested for use by Hirschfield et al. (1977) was not included in further analyses as the validity of this indice has not been adequately researched to date.

Two additional variables, as previously discussed, were included to account for any possible effects as a result of discharge, intake, and questionnaire completion dates not being coincident: 1) lag time in months between last hospital discharge and questionnaire completion - "disQlagM"; and 2) lag time in months between last hospital discharge and intake date - "dis-intM".

These transformations resulted in a final total of 20 independent (predictor) variables, a list of which is presented in Table 12.

2) Dependent variables. Conceptually, the dependent variable of interest is post-discharge outcome over a follow-up period of one year post-intake as measured by rehospitalization status. This can be operationally defined in a number of different ways as previously discussed. The three dependent variables with acceptable predictability that were retained for subsequent analyses were: 1) Rehospitalized? (yes or no); 2) total number of rehospitalizations; and 3) total number of rehospitalizations greater than or equal to one day duration. Two of these three were used in their original form while the variable "number of rehospitalizations" was transformed to its square root values in order to reduce the extreme skewness and

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kurtosis of this variable. On this variable in its original

form, one subject had 26 admissions over the follow-up period,

which was considerably greater that the number of re-admissions

for any of the other subjects which ranged from zero to 12. The

square root transformation was necessary to reduce the leverage

of this extreme point.

The dependent variables retained for further analysis as

described above, are outlined in Table 12.

TABLE 12:
TRANSFORMED VARIABLES USED IN DATA ANALYSES

Independent Variable Names	Description
sex	male/female
intkage	age at intake
MarrYn	married yes/no
HSYN	high school completion yes/no
kids	children yes/no
#kids	number of children
FamInvYN	Family Involved yes/no
status	inpatient/outpatient
group	assertive outreach/std community aftercare
MHC	Mental Health Center Surrey/ New Westminster
srtHosHx	hospitalization history (square root)
SchizYN	Schizophrenia yes/no
MoodYN	Affective Disorder yes/no
LOT	total optimism score
LOCB	total locus of control score
EMOREL	(Emotional Reliance on Another Person-IDI)
SOSELCON	(Lack of Social Self-confidence-IDI)
AUT	(Assertion of Autonomy-IDI)
disQlagM	months between discharge and personality questionnaire completion
dis-intM	months between discharge and intake

Dependent Variable Names (one-year follow-up)	Description
RehospYN	Rehospitalized? yes/no
srt#Reho	# of Rehospitalizations (square root)
#Rehos$\geq$1	# of Rehospitalizations $\geq$1 day duration

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<u>Data management of treatment group</u>. Prior to conducting the
regression analyses to determine which independent (predictor)
variables were central in predicting the dependent variables, two
tests were completed to determine whether it was necessary to
conduct separate analyses for the assertive outreach and standard
community aftercare groups, as demographic data and statistical
tests comparing the means of the two groups suggested that these
groups did not differ significantly on any of the dependent
variables. These tests were: 1) a test of the homogeneity of
conditional variances in the two groups; and 2) a test of the
identity of the regression hyperplanes for the two groups.

1) Test of homogeneity of conditional variance. A series
of F tests comparing the ratio of residual mean squares for the
assertive outreach (RMS_E) and standard community aftercare groups
(RMS_C) was completed in order to examine the relative
accuracy/error of prediction in each of these groups. These
tests were completed for two reasons: general interest, and
adherence of the data to assumptions required for further
statistical analyses.

With regard to the first of these reasons, if predictability
in the treatment groups is differentially accurate, then this has
direct relevance regarding the conduct of future research in this
area, as well as having implications for any conclusions drawn.
With regard to the second reason, all subsequent tests to be
conducted in the present study assume equal predictability of
groups. If these F tests were insignificant, there would be no

evidence to suggest that this assumption of homogeneity of conditional variance was violated.

This test was completed three separate times: once using all predictor (independent) variables excluding group (p= # of predictors = 19), and twice using different subsets of independent variables (p=8; p=4) including only those most useful to prediction of the dependent variables. The results of these analyses are presented in Table 13.

TABLE 13:
TESTS OF HOMOGENEITY OF CONDITIONAL VARIANCES OF THE TREATMENT GROUPS (N=94)

$$F = RMS_E/RMS_C$$

| All Predictors df = 31, 23 # predictors = 19 | | |
Dependent Variable	F	p
Rehospitalized? (Y N)	1.02	.98
# Rehospitalizations	1.14	.76
# Rehospitalizations $\geq$ 1 Day	.98	.94

| Subset # 1 df = 42, 34 # predictors = 8 | | |
Dependent Variable	F	p
Rehospitalized? (Y N)	1.00	1.00
# Rehospitalizations	1.25	.50
# Rehospitalizations $\geq$ 1 Day	.86	.64

| Subset # 2 df = 46, 38 # predictors = 4 | | |
Dependent Variable	F	p
Rehospitalized? (Y N)	1.11	.74
# Rehospitalizations	1.26	.46
# Rehospitalizations $\geq$ 1 Day	.86	.62

As can be seen in Table 13, there are no significant differences in the conditional variances in the assertive outreach and standard community aftercare groups (i.e., all ps > .46). On the basis of these results, there is no evidence to

suggest that the null hypothesis of homogeneity of conditional variances is false and should be rejected - i.e., there is no evidence suggesting that one group is consistently more predictable in terms of accuracy than the other.

2) Test of identity of the regression hyperplanes. This test was done in order to ascertain whether there were significant differences in the regression structures for the two treatment groups. If regression structures differed, then subsequent analyses would have to be completed separately for these groups. If regression structures were not significantly different, then analyses could be completed on the two groups combined, without any significant loss of information.

This test of identity consisted of an F test of the residual sum of squares for the assertive outreach group (RSS_m) versus the residual sum of squares for the standard community aftercare group (RSS_c) versus residual sum of squares for the groups combined (RSS), to see if these three differed. This test was sensitive to any differences in slopes and/or intercepts of the regression structures for the two treatment groups. Significant F's on this test would suggest that the regression structures for the assertive outreach and standard community aftercare groups differed.

As with the test of homogeneity of conditional variances, this test was conducted three separate times to ensure the reliability of the results. First it was completed using all possible predictors (p = 20), then using two different subsets of

predictor variables (p = 9, p = 5). The results of these

analyses are presented in Table 14.

TABLE 14:
TESTS OF IDENTITY OF THE REGRESSION HYPERPLANES FOR TREATMENT
GROUPS (N=94)

$$F_{p+1, \; n-2-2p} = \frac{[RSS - (RSS_E + RSS_C)]/p+1}{(RSS_E + RSS_C)/[(n_E-1-p) + (n_C-1-p)]}$$
$$(p = \text{number of predictors})$$

All Predictors   df = 20, 54   # predictors = 19

Dependent Variable	F	p
Rehospitalized? (Y N)	.98	.50
# Rehospitalizations	1.00	.48
# Rehospitalizations $\geq$ 1 Day	.75	.76

Subset # 1   df = 9, 76   # predictors = 8

Dependent Variable	F	p
Rehospitalized? (Y N)	.76	.65
# Rehospitalizations	1.32	.24
# Rehospitalizations $\geq$ 1 Day	.63	.77

Subset # 2   df = 5, 84   # predictors = 4

Dependent Variable	F	p
Rehospitalized? (Y N)	1.13	.35
# Rehospitalizations	1.41	.23
# Rehospitalizations $\geq$ 1 Day	.77	.57

As can be seen in Table 14, in no case were the results of

these F tests significant (all ps > .23), indicating that the

regression structures for the two treatment groups did not differ

significantly, either in slopes or in intercepts.

Regression Analyses. Because the accuracy of prediction did

not differ significantly for the assertive outreach and standard

community aftercare groups, and because the regression structures

for these also did not differ significantly, the two groups were

combined for all subsequent analyses. These were based on the

complete correlation matrix of all variables used which is presented in Appendix D.

Multivariate regression analyses of the "all possible subsets" type was completed for each of the dependent variables. The method "R squared" (multiple correlation squared, R^2) was chosen as the criteria to identify the "best" subsets, with R^2 representing the amount of variance accounted for in the dependent variable using a particular subset of predictors.

The regression coefficients obtained from these analyses will not be discussed, as the sample size is too small and the ratio of the number of variables to the number of subjects is too large to warrant consideration of the regression coefficients as specific beta weights having general applicability. In addition, since a large number of regression analyses were completed, the reliability of the specific values of the beta weights is open to question. For these reasons, the regression analyses are best seen as a contribution towards the elucidation of the ability of various factors to predict rehospitalization in the present sample, rather than as having utility for specific predictions in the future.

The complete results of the regression analyses for the three retained dependent variables are presented in Appendix E. Based on these analyses, the maximum amount of variance accounted for in a dependent variable was 27.17% which was obtained for the dependent variable "srt#Rehosps" using six predictor variables. For the dependent variable "RehospYN" 19.86% of the variance was accounted for by using nine predictor variables and for the

dependent variable "#Rehos$\geq$1", the maximum amount of variance accounted for was 17.45% which was obtained using seven predictor variables. There are differing schools of thought regarding the practical significance of findings of this general magnitude. Rosenthal (1990) for example, would argue that these are not modest results.

A study of Appendix E reveals some general patterns of results. Confining the discussion only to those subsets that produce R^2s in the general range of .17 or better, certain predictor variables are always present, regardless of the dependent variable chosen. These variables, most important in prediction of rehospitalization status are srtHosHx, HSYN, MHC, and MoodYN. These results suggest that for this sample, those most at risk for rehospitalization over a one-year period are those subjects with a greater number of prior hospitalizations, those who have completed high school, those assigned to the New Westminster Mental Health Centre, and those subjects with diagnoses other than mood (affective) disorders.

In addition to these independent variables, two others were of secondary important in the prediction of the dependent variable "RehospYN": MarrYN and EMOREL. This suggests that married subjects and those scoring high on the Emotional Reliance on Another Person subscale of the Interpersonal Dependency Inventory are also at greater risk for rehospitalization. The predictor variable "status" also began to appear consistently as an important predictor when nine variables were included in the regression equation, suggesting that outpatient status at the

time of completion of the personality questionnaires also was related to later hospitalizations.

For the dependent variable "#Rehos$\geq$1", the variable "status" was also of secondary import to prediction, as was the variable "disQlagM", suggesting that outpatient status and having completed the personality questionnaires in a shorter time period following discharge was associated with more rehospitalizations of greater than or equal to one day duration.

Factor Analyses. Exploratory factor analyses using all independent and dependent variables were conducted in order to obtain corroborative evidence for conclusions reached on the basis of the multiple regression analyses. Factors were extracted using principal components analysis, and both orthogonal (Varimax) and oblique (Direct Quartimin) rotations were completed. Since the pattern of factor scores was essentially identical for both rotations, except for minor shifts in the position of non-salient variables, the "Varimax" orthogonal rotation was preferred for its simplicity as the Direct Quartimin oblique rotation did not add any new information.

The above procedure yielded eight factors with eigen values greater than one that together accounted for 70.81% of the total variance. A plot of the eigen values obtained for each of the factors was not particularly revealing in terms of deciding the optimal number of factors to retain (see Appendix F for a listing of the eigen values and the proportion of variance in the data space accounted for by all unrotated factors).

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Examination of the communalities, or the percentage of variance of each variables total variance accounted for by a given number of factors, revealed that a three factor solution was able to account for between 71% and 90% of the total variance in each of the dependent variables. Beyond three factors, the amount of variance accounted for in any of the dependent variables did not increase appreciably. However, a three factor solution, though conceptually preferable, was able to account for only 37% of the total variance in the data space, and the amount of unexplained variance for many of the independent variables was relatively high if only three factors were retained.

Regarding communalities for the predictor variables, a five or six factor solution is adequate to account for most of the variance in all but a few predictors. Examination of the rotated solutions for five and six factors revealed essentially the same pattern. All other considerations being equal, for the sake of completeness with regard to explaining the greatest proportion of variance for the greatest number of variables, a six factor solution accounting for 60% of the total variance in the data space was preferred. The retained rotated six factor solution is presented in Table 15.

The obtained factor structure is consistent with the results of the regression analyses previously discussed.

Factor 1 loads highly in the positive direction on the three dependent variables (RehospYN, srt#Reho, and #Rehos>1), prior hospitalization history (srtHosHx), and HSYN, and negatively on mental health centre (MHC). This is consistent with the results

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of the regression analyses where mental health centre, high
school, and prior hospitalization history were three of the four
most important predictors of rehospitalization status. This
factor would seem to represent risk for rehospitalization.

TABLE 15:
ROTATED FACTOR LOADINGS (VARIMAX)

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
group	.14	-.12	.24*	-.08	-.06	-.20*
SrtHosHx	.40*	.33*	-.17	.18	-.11	-.27*
sex	.04	.35*	.59*	.06	.17	.08
disQlagM	-.16	.03	-.13	-.16	.82*	-.05
intkAge	.04	.84*	.05	.09	-.03	.07
SchizYN	.08	-.08	-.87*	-.10	.08	.02
MoodYn	-.15	.16	.85*	.07	-.07	-.05
MarrYn	.07	.53*	.01	.08	-.05	-.22*
FamInvYN	-.04	.07	-.01	-.15	-.28*	-.55*
KidsYN	-.10	.81*	.29*	-.05	.12	.14
HSYN	.20*	-.31*	.26*	-.15	.05	.20*
#kids	-.13	.84*	.18	-.07	.14	.07
status	.08	.11	.26*	.04	.60*	.04
MHC	-.24*	.14	-.10	.18	.00	-.27*
Dis-IntM	.04	.03	.16	.02	-.87*	.01
OPT	.02	-.03	-.25*	-.74*	.03	.07
LOCB	.00	.02	.02	.87*	-.02	-.03
EMOREL	.06	.06	-.08	.73*	-.05	.26*
SOSELCON	-.05	.06	-.12	.40*	-.10	.63*
AUT	.12	.05	-.00	-.12	-.19	.71*
RehospYN	.89*	-.02	-.09	.04	.02	.13
Srt#Reho	.94*	-.08	-.05	-.03	-.09	.09
#Rehos$\geq$1	.86*	-.01	.05	.00	-.01	-.03
Variance= Explained	2.81	2.78	2.31	2.20	2.01	1.61

* factor loadings $\geq$ .20

Factor 2 loads positively on kidsYN, #kids, intkAge, sex,
srthoshx, and MarrYn, and negatively on HSYN. The combination of
variables creating this factor represents a demographic profile
of the married, older, female with children, who has not

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completed high school and has a history of a greater number of prior hospitalizations.

The third factor has its highest loadings on sex, status, HSYN, kidsYN, MoodYN, SchizYN, group, and optimism. This again suggests a demographic profile, similar to Factor 2, of the female with children who has completed high school, with a diagnosis other than schizophrenia (in particular mood disorders), who has a less optimistic outlook, and is assigned to the assertive outreach treatment group. Put more succinctly, this factor suggests a depressed, educated mother who is in the assertive outreach program.

The fourth factor has its highest loadings on all but one of the personality indices, in the direction of lesser desireability from a clinical perspective (i.e., external locus of control, low optimism, high Emotional Reliance on Another Person, and a high Lack of Social Self-confidence). This factor seems to represent some indication of poor personal adaptability with relatively greater dependency and pessimism, and a lack of belief in personal control over problem behaviors.

Factor 5 loads positively on status and disqlagm, and negatively on FaminvYN and dis-intM, indicating out-patient status at the time of personality questionnaire completion, no family involvement, a longer time period between discharge and subsequent personality questionnaire completion, and a longer length of time between last (pre-study) discharge and intake. This factor would seem to represent subjects entering the study and completing the questionnaire a longer time after last

hospital discharge who were out-patients at the time of questionnaire completion. A lack of family involvement was also evident, but the loading on this variable was much smaller than that for the other three variables contributing to this factor.

Factor 6 has relatively high loadings for a large number of variables. It loads positively on EMOREL, AUT, SOSELCON, and HSYN, and negatively on FaminvYn, srthoshx, MHC, group, and MarrYn. Together, this produces a pattern of greater dependency and education, unmarried with no other family involvement, fewer prior hospitalizations, and assignment to the standard community aftercare treatment group at the New Westminster Mental Health Centre. These variables together seem to suggest a person who is relatively more educated with few prior hospitalizations, but somewhat isolated socially who is expressing greater dependency needs.

Summary of Results

The present study was designed to examine the role of specific personality factors in the prediction of post-discharge outcome as measured by rehospitalization status over a follow-up period of one year. Rehospitalization status was operationally defined by three dependent variables: Rehospitalized yes or no, Number of Rehospitalizations (square root form), and Number of rehospitalizations of greater than or equal to one day duration. Secondarily, the role of aftercare services (assertive outreach vs standard community-based care) was also examined with respect to post-discharge outcomes.

Hypothesis testing: The relationship between personality and rehospitalization status. Regarding the primary goal of the present study, three specific hypotheses were formulated a priori:

1. Subjects scoring higher on the Life Orientation Test (i.e., more optimistic) will have superior outcomes in terms of lower rates of recidivism than those scoring lower on the Life Orientation Test.

2. Subjects scoring lower on the Locus of Control of Behavior Scale (i.e., a more internal locus of control orientation) will have superior outcomes in terms of lower rates of recidivism than those scoring in the more external direction on the Locus of Control of Behavior Scale.

3. Subjects scoring in the less dependent direction on the Interpersonal Dependency Inventory subscales (i.e., lower scores on Emotional Reliance on Another Person, lower scores on Lack of Social Self-confidence, and higher scores on Assertion of Autonomy) will have superior outcomes in terms of lower rates of recidivism than those scoring in the more dependent direction on the Interpersonal Dependency Inventory (IDI) subscales.

Partial support for one of these hypotheses was obtained in the present study.

These hypothesis were addressed first by examining correlations between these variables, and secondly, by a series of All Possible Subsets Multiple Regression Analyses using three

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operational definitions of rehospitalization status as dependent variables.

With respect to the correlation data, no significant relationships were found between any of the personality measures and the rehospitalization statistics. Correlations ranged from zero to a maximum of .19.

With respect to the regression analyses, the only personality factor consistently important in the prediction of reshopitalization status was Emotional Reliance on Another Person (EMOREL). Consistent with the a priori hypothesis, those scoring higher on EMOREL were more likely to be rehospitalized over the follow-up period. This factor however, only appeared in the regression equations predicting the dependent variable Rehospitalized yes/no, and not in the prediction of dependent variables associated with number of rehospitalizations. The secondary import of this variable in rehospitalization prediction is reflected also in the observation that EMOREL only entered the prediction equation consistently when nine variables were included in the subset of independent variables. Because of the relatively small sample size and the large number of predictors used in the regression analyses, variables entering the equation this late in the process are suspect of being somewhat reflective of sampling error, and perhaps more a reflection of chance rather than a "true" relationship that would be observed in replications with other samples.

Exploratory factor analysis using principal components analysis for initial factor extraction and the Varimax orthogonal

rotation confirmed these observations. The personality factors did not load highly on the same factor as the dependent variables. Although EMOREL was a predictor of some import in one regression equation, it did not load highly on the factor including all the dependent variables, suggesting that overall, it was not highly related to rehospitalization status. Rather, EMOREL was significantly related to only one of the three dependent variables, Rehospitalized yes/no.

In general, the hypothesized relationships between personality and rehospitalization status were not observed. The only exception is the EMOREL subscale of the IDI which was of secondary import in the prediction of Rehospitalized yes/no, whereby high scorers on this subscale were more at risk for rehopsitalization than those less emotionally reliant on others.

The relationship between aftercare services and rehospitalization status. The relationship between aftercare service (i.e., Assertive Outreach vs standard community-based care) and rehospitalization status was also examined in a number of ways, each suggesting that this variable did not have a significant impact on outcome.

Firstly, descriptive statistics for the two groups on each of the three dependent variables did not appear to differ significantly, an observation that was confirmed by a series of statistical tests.

Secondly, tests of the homogeneity of conditional variances of the two groups as well as tests of the identity of the regression hyperplanes were conducted for three separate sets of

independent variables for each of the dependent variables. These test indicated that the accuracy of prediction was equivalent for the two groups, and that neither the slopes or the intercepts of the regresssions hyperplanes were significantly different for the two groups. Because there was no evidence to suggest that the assertive outreach and standard community aftercare groups differed on any of the follow-up measures, they were combined for subsequent analyses.

Further evidence for the relative impotence of "group" in predicting rehospitalization status at one year follow-up was obtained from the regression analyses whereby "group" did not consistently enter any of the regression equations. In fact, the only dependent variable where group appeared at all was the "number of rehospitalizations of duration greater than or equal to one day", where it appeared only sporadically.

The results of the factor analysis were also highly consistent with all other analyses with respect to treatment condition, whereby the variable "group" did not load highly on Factor 1 representing "Risk for Rehospitalization".

Interaction between personality and treatment group. In addition to the three central hypotheses tested and discussed above, it was also speculated a priori that dependency may interact with treatment type such that for those scoring higher on dependency, superior outcomes may be observed in the assertive outreach group as compared with the standard community aftercare group. For those scoring in the direction of lesser dependency,

differences between the two treatment groups would be more minimal.

Information regarding this speculation can be extracted from those analyses already discussed. All tests conducted found no evidence to suggest any differences in outcome on the basis of group membership.

This assertion of an interaction between dependency and group was also tested explicitly by performing a series of multiple regression analyses using only the subscales of the IDI as predictor variables. Tests for homogeneity of conditional variances and equality of the regression hyperplanes (as discussed above) were then completed. With regard to homogeneity of conditional variances, Fs ranged from .89 to 1.12 for the three dependent variables and all probabilities were greater than .70 indicating that accuracy of prediction was not significantly different for the two treatment groups. With regard to the tests of parallelism of the regression hyperplanes, Fs ranged from .42 to 1.33 for the three dependent variables with all probability values being greater than .27 indicating that there were no significant differences between the groups in either the slopes or intercepts of the regression structures when only the IDI subscales are used as predictors. On the basis of these tests, there is no evidence to suggest an interaction between dependency and treatment group with respect to rehospitalization status.

The prediction of rehospitalization. Variables important in the prediction of rehospitalization status were isolated through a series of All Possible Subsets Multiple Regression Analyses

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using three separate operational definitions of rehospitalization status as dependent variables. These analyses indicated that four independent variables were consistently important in the prediction of rehospitalization. These variables were prior hospitalization history, completion of high school, assignment at the New Westminster Mental Health Centre, and DSM III-R Axis I primary diagnoses other than affective disorder.

Other variables of secondary import in prediction were Emotional Reliance on Another Person, "married-yes", outpatient status at the time of personality questionnaire completion, and a shorter time period between discharge and personality questionnaire completion.

Specific regression coefficients have not been discussed, as the small sample size and large number of variables precludes consideration of the regression coefficients as specific beta weights having general applicability to prediction.

Factor analysis in part comfirmed these results in that hospitalization history, mental health centre, and completion of high school loaded highly on the factor representing "Risk for Rehospitalization".

Conclusions

Hypothesis Testing: The Role of Personality in the Prediction of Rehospitalization

The present study was designed to investigate the role of specific personality factors in the prediction of rehospitalization status over a follow-up period of one year. Of optimism, locus of control, and interpersonal dependency, only

the EMOREL component of dependency was an important predictor in whether or not subjects were rehospitalized during the course of the follow-up period.

As was hypothesized, high scores on EMOREL indicating greater emotional reliance on another person were associated with poorer outcomes. The fact that this variable did not enter the prediction equation until nine predictors were accepted, together with the fact that it was significant with respect to only one of the three dependent variables, renders this result not particularly impressive, and more suspect as being the result of sampling error peculiar to the present study. Nonetheless, EMOREL did appear in the present results, in spite of the difficulties in execution of the research design that have been outlined above. In addition, from both theoretical and more concrete points of view, the potential significance of this variable regarding rehospitalization status remains. For these reasons, the role of dependency will be discussed further in the section entitled "Implications of the present empirical investigation for current and future practise and research".

Observed Rehospitalization Rates

In addition to specific hypothesis testing, several other findings of the present study are worthy of note. Overall, the rate of rehospitalization over a one year period was 40% in the present study and 37% if that statistic was restricted to hospitalizations of at least one day duration. This finding is entirely consistent with rates of 30 to 50% typically reported in

the literature for follow-up periods of up to one year (cf. Anthony, et al., 1972; Anthony, et al., 1978).

Variables Predictive of Rehospitalization Status

Other major findings of the present study relate to those variables that are consistently important as predictors of rehospitalization over a one-year period. These variables were prior hospitalization history, completion of high school, the absense of a mood disorder diagnosis, and attendance at the New Westminster Mental Health Centre.

Prior hospitalization history. Consistent with results reported in the literature, prior hospitalization history was the most important predictor of rehospitalization status, regardless of the way in which this dependent variable was operationalized. As discussed earlier, this finding has been replicated in over 30 different study populations and over follow-up periods ranging from six months to 15 years post-discharge (cf. Buell & Anthony, 1973; Rosenblatt & Mayer, 1974).

Education. The second most important predictor of rehospitalization status in the present study was "HSYN" such that completion of high school was associated with poorer rehospitalization status outcomes at one year. This finding is not consistent with reports in the literature that recidivism is not significantly related to level of education (Buell & Anthony, 1973; Buell & Anthony, 1976; Byers & cohen, 1979; Lorei & Gurel, 1973). Though the reason for this observation in the present study is difficult to discern, one possible explanation is that those subjects with more education more readily sought the

assistance of hospital care when in need of such as a direct result of either intelligence, or greater insight into their illness, and/or a greater understanding of the advantages of using available resources. These individuals may have been more sensitive to their own need for assistance when ill, and more willing to seek professional help when such was warranted.

An alternate hypothesis is that the variable "high school" functioned as a "surrogate" or stand-in for another predictor variable with which level of education was highly correlated but which was not included in the present analysis. Here, one possibility is age of onset of psychiatric illness.

Presumably, those subjects able to complete high school were older at the time their illness was first seriously manifest, and hence their lives were not significantly disrupted until certain life tasks such as education were more complete. For these people, the sense of loss experienced when psychiatric symptomatology disrupts their lives would likely be greater than for those whose adjustment had been more chronically marginal. Hence, these more "accomplished" individuals may be more subjectively aware of and dismayed by the implications of their illness, and therefore would more readily seek assistance to remedy their symptoms as they appear. Anecdotal reports of the assertive outreach research staff suggest that this may be a possibility, as their observations are that the more chronically marginally adjusted individuals are less likely to seek assistance through hospitalization when decompensation occurs.

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The tenability of this hypothesis is however, difficult to evaluate as research to date has not specifically addressed the variable "age of onset of illness". Studies reported in the literature review in Chapter II that have included "chronicity indexes" typically have grouped age of onset measures together with number of previous admissions and other variables such as length of prior hospitalization, rendering the interpretation of findings difficult, especially in light of the fact that number of prior admissions is known to be a potent predictor. Hence, empirical investigations including age of onset as a unique, individual predictor are required before firm conclusions regarding this variable can be made.

On the basis of the present results, "completion of high school" or whatever this variable may represent, is strongly predictive of rehospitalization. However, the relatively small sample size in the the present study precludes generalization beyond the subjects studied here until such results are replicated in other samples.

Mental health centre. Mental health centre was another important predictor of rehospitalization status, such that assignment to the New Westminster Mental Health Centre was associated with poorer outcomes. The reason for this finding is unclear, and may represent either differences in practise at the two mental health centres (Surrey and New Westminster), differences in the population or geography in these two areas, or some combination or these. Though none of these factors were

measured directly, Assertive Outreach research staff confirmed that these explanations are feasible.

With respect to different practises at different mental health centres, a certain amount of discretion is left to the various directors to implement government mandates, and hence the criteria used in the decision to rehospitalize clients may differ. Anecdotal observations of research staff regarding differences in the geography and populations at these two centres are such that New Westminster is a much more centralized community, with easier access to hospitals in so far as transportation is concerned. Apparently, there is also more subsidized low-cost housing available in New Westminster, and research staff had the general impression that Surrey clients were generally of higher socio-economic status than their counterparts in New Westminster.

These explanations however, remain as speculations until such time as they are empirically tested. Furthermore, research staff reported that there was a substantial amount of migration of clients in the standard community aftercare treatment group between various mental health centres. For clients in the assertive outreach program this was not a factor as staff from the originally asigned mental health centre followed their clients if they relocated to another area. The variable "MHC" used in the present study represented the mental health centre that subjects were currently associated with at the time they completed the personality questionnaires, and may or may not have

represented the mental health centre they were assigned to throughout the majority of the study period.

Diagnosis. The fourth most important variable overall in the prediction of rehopsitalization status was "MoodYN", such that those subjects carrying a diagnosis other than an affective disorder, in particular schizophrenia, had poorer outcomes in terms of rehospitalization status. The fact that "Mood No" and not "schizophrenia Yes" was the important variable, suggests that subjects with "other" Axis I Primary diagnoses, which included anxiety disorders, adjustment disorders, and substance use disorders, had more similar outcomes to schizophrenia than to affective disorder diagnoses.

The finding that diagnosis is an important predictor of recidivism in the present study is somewhat at odds with the concensus in the literature suggesting that this variable is not significantly related to rehospitalization status (see, for example, Anthony, et al., 1978; Buell & Anthony, 1976; Byers & Cohen, 1979). Some authors however, have found slight differences in rehospitalization rates on the basis of diagnosis such that schizophrenics tend to fare worse than other diagnoses (Bland, 1982; Bland & Orn, 1982; Buell & Anthony, 1973; Fontana & Dowds, 1975b; Gaebel & Pietzcker, 1975; Hawk, Strauss, & Carpenter, 1975; Pietzcker & Gaebel, 1987; Strauss & Carpenter, 1972). The pattern appears to be that while diagnosis in general does not consistently predict rehospitalization status, the distinction between "schizophrenia" and "not schizophrenia" may have some utility, as it has been repeatedly demonstrated that

this particular illness typically tends to have worse outcomes than others. Such would appear to have been the case in the present sample.

Aftercare Services and Rehospitalization

Another major finding of the present study, and one that is also inconsistent with results reported in the literature, is the lack of a relationship between aftercare service and rehospitalization status. The assertive outreach program employed in the present study was modelled after well-established programs that have repeatedly demonstrated a significant effect on recidivism. Although most studies report significantly lower recidivism rates in some form of assertive outreach program as compared with standard community-based aftercare (e.g. Bond, et al., 1988; Bond, et al., 1989, Test, 1990; Test & Stein, 1980), this pattern was not observed in the present study.

Several possible explanations exist for this discrepancy. First, the time difference between intake date and discharge date had the effect of changing the time between discharge and follow-up to periods greater than one year for a significant portion of subjects in the present study. Of the present sample, 62% had been discharged for periods of greater than one year, and up to three years at the time of follow-up. For these subjects, some degree of "success" and community integration was already achieved prior to the initiation of the present study.

Evidence for this possibility lies in the established finding that the greatest risk for rehospitalization is during the first one or two years following hospital discharge. It has

been found that of persons who will eventually be rehospitalized over a 15 year period, 38% will have been rehospitalized within one year of hospital discharge, and 63% will have been rehospitalized by two years post-discharge (Engelhardt, et al., 1982). Similarly, Brown et al., (1958) reported that of those destined for rehospitalization over a six year period, 58-74% will have been re-admitted during the first year post-discharge. These figures suggest a continual decrease in the number of new recidivists as time from last hospital discharge increases.

Because of this fact, the potency of the assertvie outreach program in the present study may have been masked somewhat by the fact that for all subjects, the standard community aftercare treatment group included, the overall risk of rehospitalization was likely not as high as it may have been had all subjects been tracked for one year from the date of last hospital discharge. This relative stability overall, but in particular with respect to the standard community aftercare group, renders the detection of assertive outreach program effects more difficult.

Secondly, discussions with research staff suggest that a longer time period between initiation of the experimental program and follow-up periods may more accurately reflect the potency of such programs. As the protocol for the larger Riverview Economic Analysis Study called for face to face interviews with subjects every six months, research staff had formulated some general impressions regarding the evolution of the assertive outreach program.

One conclusion held by researchers was that current policies regarding hospital admissions are such that out-patients must now be more seriously ill before admissions are accepted. Research staff felt this factor was particularly significant for subjects in the standard community aftercare treatment condition who would not have been admitted readily until more serious manifestations of illness were evident. Such decompensation generally evolves over time, and therefore it was felt that it would generally take subjects longer to become ill enough so that admissions would be considered by hospital staff.

Research staff also reported the observation that early on in the study, subjects assigned to the assertive outreach treatment condition tended to escalate "acting-out" behaviors in order to maintain familiar patterns of returning to the security of hospitalization when difficulties arose. Research staff felt that a certain period of rapport building on the part of the patient was necessary before confidence in the assertive outreach treatment as a replacement for coping via rehospitalization was established. Research staff also began to notice changes in subjects' perception of their illnesses especially regarding increased insight, as well as self-reported increases in trust and satisfaction with the assertive outreach program at the one year post-intake interviews. These observations suggest that it takes some time before patients are able to take full advantage of the benefits offered by assertive outreach programs, and that follow-up periods longer than that employed in the present study may reveal more potent effects.

It was also suggested that the attitudinal types of factors discussed above may have played a more significant role in the present study as compared with studies typically reported in the literature. Nearly half of the present sample (43%) had diagnoses other than schizophrenia, where overt psychotic manifestations and decompensation may less frequently be the primary factor in hospital admission.

Variables of Secondary Import in the Prediction of Rehospitalization Status

Other observations of the present study that warrant some comment are those that pertain to predictor variables that were of secondary import in the prediction of rehospitalization status. In addition to Emotional Reliance on Another Person, these variables include "status (outpatient)", "(shorter) lag time between discharge and personality questionnaire completion" and "married (yes)".

Though these observations are somewhat quizzical from a conceptual point of view, they nonetheless are reflective of the present sample. As with EMOREL, the credibility of these variables as being important predictors is suspect as they entered the regression equation only after the other more consistently important variables, and their contribution to accounting for variance in rehospitalization status was relatively minor.

Status at time of personality questionnaire completion. The relevance of status at the time of questionnaire completion in predicting rehospitalizations of duration greater than or equal

to one day is difficult to understand. Eighty subjects completed the questionnaire as outpatients, and for the remaining 14 who completed the initial assessment in anticipation of their forthcoming discharge, all were released from hospital within one month of assessment. That this short time period could have a significant bearing on rehospitalization status is surprising.

Time lag between discharge and personality questionnaire completion. Similarly, that a shorter time period between last (pre-study) hospital discharge and completion of the personality questionnaire package is predictive of a greater risk for subsequent hospitalization is difficult to explain. Completion time of the personality questionnaires is largely an artifact of difficulties in the execution of the experimental design, and it is not logical that the timing of this event should relate to subsequent hospitalization status.

The fact that the time lag between last (pre-study) discharge and intake was included as a predictor (but was not chosen in any of the equations), negates the possibility that these findings are the result of effectively longer follow-up time periods with respect to last hospital discharge. These peculiar findings therefore must be suspect as perhaps largely reflecting sampling error, and not results that would be expected to appear upon replication.

Marital status. The last variable of secondary import was "married (yes)" that was relevant in the prediction of the dependent variable "Rehospitalized Yes/No". Again, this finding is a relatively weak one, as marital status entered the

regression equation only after the more important variables. Reports in the literature with respect to marital status and rehospitalization status have been variable. Though most have found either no relationship, or more favourable outcomes for married subjects, there is some suggestion that for a subset of individuals, the reverse may be true. Veiel (1990) for example has found that among depressed women, married subjects tend to fare worse than their single counterparts. The weak finding of a relationship between being married and being at greater risk for rehospitalization in the present study, may in fact be reflecting this relationship for a subset of subjects. Unfortunately, it was not possible to investigate the role of sex differences, or differences with respect to diagnostic groups in the present study, as the sample size was too small to accomodate such analyses. As with the other findings of the present study, this observation awaits replication before more firm conclusions can be drawn.

CHAPTER VII

IMPLICATIONS OF THE PRESENT EMPIRICAL INVESTIGATION FOR FUTURE

RESEARCH AND PRACTISE

The empirical investigation reported in this dissertation focused on the role of three specific personality factors - optimism, locus of control, and interpersonal dependency - in the prediction of psychiatric rehospitalization. Results of the study indicated that of these three, only the "Emotional Reliance on Another Person" component of interpersonal dependency was a significant predictor of rehospitalization status over a one-year follow-up period. Furthermore, this variable was of secondary import relative to prior hospitalization history, education, treatment locale, and diagnosis.

That the role of personality in the prediction of psychiatric hospitalization was only a minor one is not surprising, given the relative potency of other variables operating in this context. Interpretations of the results of the present study suggested that factors such as diagnosis (i.e., schizophrenia) and severity of illness (prior hospitalization history), patients' socio-economic status and their willingness to seek treatment, as well as philosophy of the treatment team regarding indications for hospitalization, may have had an over-riding effect on whether or not individuals would be rehospitalized over the follow-up period. Consistent with established literature in the area, one would not expect personality factors to play a role more central than those

related to relatively severe psychiatric pathology, and the decisions regarding appropriate treatment for such manifestations. It was nevertheless expected that it would have a greater role than was observed. Possible explanations for the limited role that was observed provide suggestions for future research.

Implications for Future Research

Interaction Between Personality and Psychiatric Diagnosis

It is possible that personality interacts with other patient characteristics, particularly severity of illness; and that personality may be more relevant to the prediction of rehospitalization in cases where manifestations of florid psychopathology are not so severely incapacitating. In the present study, patients with diagnoses other than affective disorders, especially schizophrenia, were most likely to be rehospitalized over the follow-up period. Perhaps, of those at risk for re-admission for the treatment of less severe psychiatric illnesses, such as neurotic depression, personality and other attitudinal factors may have a greater impact.

This possibility of an interaction between severity of illness and personality is one that was also informally endorsed by research staff on the basis of their more extensive interactions with, and observations of, patients.

Teuber (1960) examined the likelihood of such an interaction in one of the most severe psychiatric disorders, brain damage. He observed that where he had the most objective data, he was

forced to conclude that premorbid personality had little moderating effect.

Choice of Specific Personality Factors

Another consideration for future research involves the choice of which specific personality factors are most relevant in the context of psychiatric illness. The personality variables included in the present study reflect an academic orientation, and are perhaps most applicable to "normal" samples. For those suffering from a superimposed psychiatric illness, other personality factors may have more relevance.

Walton (1986) for example, found that certain personality factors were associated with illness outcome, but only because of their association with illness. Sociopathy traits, for example, interacted with psychiatric illness such that the poorest outcomes were observed in those cases where sociopathic traits were present in addition to more severe illnesses. Perhaps stronger findings between personality and rehospitalization status would be observed if studies examined more qualitatively pathological, or clinically significant traits.

Psychiatric Assessment of Personality Disorders

The incorrect usage of diagnostic protocol on Axis II of the DSM-III-R system of classification for mental disorders by practising psychiatrists, as observed in the present study and by others (e.g., Walton, 1986), is another factor that has a direct implication for future research endeavors on this topic. Though one could assume that the problem of diagnostic unreliability has become a more historical issue with the introduction of DSM-III

and the use of operational definitions, present findings suggest
that this assumption is not entirely warranted. As Walton (1986)
suggested, six years after its introduction, not only is
personality typically neglected in contemporary practise, but it
is unreliably assessed when it is considered. One possibility is
that the hospital psychiatrists selected patients for discharge
on the basis of personality as much as illness. The extent to
which personality traits are treated as symptoms of an illness by
practising psychiatrists must be addressed by future research
into the role of personality as a moderator of the effects of
illness.

Time of Assessment

Included in the issue of ensuring reliability of personality
assessment is the issue of the timing of such assessments.
Research such as that carried out by Teuber (1960) often refers
to the "premorbid" personality. Contrary to the established view
that personality is relatively fixed and immutable, a person's
usual method of adjustment can be adversely affected by stress,
and there is some evidence to suggest that changes in personality
in the direction of greater "normality" are associated with
improvements in psychiatric illness (Hirschfeld, et al., 1983;
Walton, 1986). As such, the time at which personality measures
are administered may have some bearing on the pattern of results
observed. The strategy of conducting such assessments during
periods of relative "wellness", as was the case in the present
study, may be most optimal in terms of obtaining more "pure"
measures that are not only uncontaminated by factors directly

related to relatively potent psychiatric illnesses, but are measures of those personality traits that are likely to be most influential in determining social adjustment over the next 12 months.

Choice of Dependent Variables

The dependent variable, rehospitalization status, used in the present study, is one that has been employed most often in research published in the area. However, a multitude of other possibilities exist for accessing post-discharge success. These include client satisfaction, either with their lives in general or with specific aftercare programs, symptomatology or more general assessments of level of functioning, employment status, and legal involvements, to name a few.

Perhaps the addition of dependent variables such as these would give a broader picture of the overall success of patients' post-discharge adjustment, particularly as hospitalizations can occur for a variety of reasons, and may not accurately represent "successes" in other domains of life.

The Necessity of Large-Scale In-Vivo Studies

The general field of study addressed in the present dissertation requires large-scale studies with large numbers of subjects in order to address the multitude of variables relevant to the situation of outcomes following psychiatric hospitalization. Research must also be conducted "in-vivo". As a result, the logistics involved in executing research such as that reported in the present dissertation are formidable, and requires exctensive resources in terms of manpower and economics.

As such resources are typically not available to students, dissertations such as the present one are not possible to complete unless undertaken in conjunction with larger studies involving numerous research and clinical staff, and typically under the general direction of an established professional. Such corroborative efforts result in mutual benefits. Not only is the student able to conduct more sophisticated and externally valid research, but the larger study is enriched by the addition of other variables and research questions.

However, while the benefits of working in conjunction with a larger study are clearly to be appreciated, such research arrangements are not without their drawbacks. Most notably, when dissertation research has to dovetail into a larger research program, a certain amount of control is relinquished regarding the day to day operations of parts of the study.

This is part of a broader consideration regarding the necessity of large-scale in-vivo studies; research conducted in the "real-world" is vulnerable to compromise by uncontrollable and unforeseen events. An example in the present research was the nurses' strike that took place. Such deviations from rigid control are part of the price that must be paid when an attempt is made to research social-psychiatric problems under as natural a condition as possible.

Theoretical and Clinical Implications

Bearing the aforementioned considerations in mind, the effect of dependency observed in the present study is promising with regard to the potential of personality as a predictor of

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rehospitalization status, especially in light of the extensive
but largely unfruitful efforts published to date in search of
significant predictors of rehospitalization.

From a theoretical point of view, the notion that dependency
is relevant to the successful movement of patients from hospital
to community is most interesting, especially if understood from
the perspective of attachment theory. Margaret Mahler (1968;
Mahler, Pine, & Bergman, 1975) describes the process of
separation and individuation as it normally occurs in young
children, as a movement from total dependence to autonomous ego
functioning. "Practising efforts", enhanced by increasing
locomotive abilities, accelerate the process which peaks in a
"rapprochment crisis" that is marked by contradictory behaviors
reflecting a conflict between fears of separation and fears of
engulfement. For children, a receptive mother functions as a
secure "home base" where periodic "emotional refuelling" is
provided.

Mahler's work focuses on the process of separation and
individuation in the young child. In a metaphorical sense,
similar dynamics can be seen to occur during the transition
period for psychiatric patients from the confines of hospital (a
secure "home base") to status as an independent adult in the
community.

The appropriateness of this analogy is reinforced by the
fact that risk for re-admission is known to be highest in the
first year following discharge (i.e., separation), and then
declines steadily over time as patients develop more successful

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autonomous functioning. Furthermore, dependency, as reflected by scores on "Emotional Reliance on Another Person" in the present study, was seen to have a bearing on the outcome during this relatively critical period. Perhaps, as with young children, when dependency is more pronounced, separation fears predominate, and a return to "home base" is precipitated.

Other published research in the area, although relatively sparse, supports the notion that dependency issues are salient with respect to success at community re-integration. The degree to which hospital programs emphasize autonomy and independence has been associated with recidivism (cf. Anthony, et al., 1978), and patients themselves report that unmet dependency needs are a major problem experienced upon hospital discharge (Kinard, 1981; Spiegel & Keith-Spiegel, 1969).

These findings have some direct impications for psychiatric practise, and suggest that intervention efforts should be most dilligently applied during the earliest "separation" phase of the transition from hospital to community living. Contact with therapists at this time should be more frequent in order to allow for a "weaning" period with respect to dependency issues.

Assertive outreach programs represent the implementation of such a philosophy, and their relative success can be understood psychologically as stemming from the crucial role the "transitional person" plays in helping patients successfully negotiate the difficult task of achieving independent autonomous functioning. The trusted transitional worker metaphorically functions in the role of a "safe haven", in place of hospital,

when crises arise. The importance of this function of the assertive outreach worker is one that was in fact articulated by research staff when they recognized a necessary period of rapport building before the full benefits of the assertive outreach service could be realized by clients.

In light of the extra costs associated with assertive outreach programs at the outset, the practical utility of providing these extended services to those most in need is evident. Here it is thought that dependency in particular may hold some promise in terms of matching patients to treatments. The above formulation would suggest that individuals who are less autonomous in their functioning would derive the greatest benefit from being assigned a "transitional person". Furthermore, these same individuals, are likely the ones with a relatively greater risk for rehospitalization (especially in the absense of such extended services), as suggested by results of the study presented in this dissertation.

PART C

APPENDICES

APPENDIX A:

CLIENT SELECTION PROTOCOL

underline Client Selection Protocol

The protocol for client selection was complex, and consisted of five inclusion criteria and four exclusion criteria, ensuring some homogeneity in terms of severity of illness, diagnosis, and psychiatric history. The client selection protocol was as follows: (Taken from the manual "Community Management Program Evaluation: Assertive Outreach Program Research Component", pp. 5-7)

Inclusion Criteria

1. Chronic Mental Illness Criterion:
   A. Impaired Role Function: Must meet at least two of the following criteria on a continuing or intermittent basis for at least two years (1) Unemployed, sheltered work only, or poor work history (2) requiring public financial assistance (3) Inability to maintain a personal support system (4) requiring help in basic living skills (5) Inappropriate social behavior resulting in the demand for intervention by the mental health or criminal justice system.
   B. Duration: Must meet at least one of the following criteria (1) Undergone psychiatric treatment more intense than outpatient at least once (eg. inaptient, alternate home care or partial hospitalization) (2) Experienced an episode of continuous structured supportive residential care for at least two months.

2. Age 19 - 64 years.

3. Diagnosis: The majority will have a schizophrenic disorder but others will be drawn from any Axis I or Axis II diagnosis (including dual diagnosed) where the mental disorder(s) have led to a pattern of hospitalizations and poor community tenure.

4. Recent use of Mental Health System Criterion: Must meet one of the following criteria within the last two years.
   A. Released from a psychiatric inpatient facility and had a minimum 45 days hospitalization.
   B. A minimum of two psychiatric hospitalizations with a cumulative total of thirty inpatient days.
   C. One psychiatric hospitalization of any duration in combination with two of the following: (1) 2 emergency room visits (2) a minimum stay of two months in a residential care facility but now in independent living (3) attendance at a hospital psychiatric day program for a minumum of 30 days (4) judged to be at risk for rehospitalization by consensus of Mental Health Centre therapists.

5. Signed consent form.

Exclusion Criteria

1. Principal single diagnosis of psychoactive substance use disorder.

2. Principal single diagnosis of organic mental disorder.

3. Principal single diagnosis of developmental disorder.

4. Recent history of severe violence or behavioral dyscontrol withing the past two years. (Violence during an acute psychotic episode is not an exclusion criteria).

APPENDIX B:

CONSENT FORM

INFORMED CONSENT FORM (Form No. 01)
ASSERTIVE OUTREACH PROGRAM

Name: _____

READ THE FOLLOWING TO THE CLIENT:

- We are doing a two year research study.
- We want to look at ways of helping mental health clients
  live better on their own.
- If you (the client) agree to be in this study you may be
  given special help with day to day problems and in learning
  how to live more successfully on your own.
- For example: you may be helped with finding things to do,
  getting work, and finding a place to live.
- If you agree to be in this study, we will be doing
  assessments with you every six months.
- We will keep a file of information about you, which will
  include medical information, information about your family,
  your activities and your work, but no one will get to see
  this information except people doing the study.
- If you do not want to be in this study, you don't have to
  be, and if you decide to be in it now, but change your mind
  later, you can drop out at any time.
- There is nothing about you being in the study which can hurt
  you, or embarrass you, or keep you from doing whatever you
  like.
- By signing this form you will agree to be in the study and
  agree to let us assess you and use your files for
  information about you, and to collect information about you
  from other people as well as government, law enforcement and
  community agencies.
- This consent expires two years after you enter the study.
- Do you understand what the study is about and why we want
  you to be in it? **Be sure the client understands this.**

_____   _____
Signature of Client   Date

_____   _____
Witness   Date

_____   _____
Principal Investigator   Date

_____
Client Entry Date

APPENDIX C:

THE QUESTIONNAIRE PACKAGE

Life Orientation Test

Please answer the following questions about yourself by putting the choice you believe to be true in the appropriate bracket. For each of the following statements, indicate the extent of your agreement by using the following scale:

```
--------------------------------------------------------------------
      0               1              2             3              4
      :               :              :             :              :
  strongly           :              :             :          strongly
  disagree        disagree       neutral        agree          agree
--------------------------------------------------------------------
```

Please be as honest as you can throughout, and try not to let your responses to one question unfluence your response to other questions. There are no right or wrong answers.

1. In uncertain times, I usually expect the best.   (   )

2. It's easy for me to relax.   (   )

3. If something can go wrong for me, it will.   (   )

4. I always look on the bright side of things.   (   )

5. I'm always optimistic about my future.   (   )

6. I enjoy my friends a lot.   (   )

7. It's important for me to keep busy.   (   )

8. I hardly ever expect things to go my way.   (   )

9. Things never work out the way I want them to.   (   )

10. I don't get upset too easily.   (   )

11. I'm a believer in the idea that "every cloud
    has a silver lining".   (   )

12. I rarely count on good things happening to me.   (   )

Locus of Control of Behavior Scale

Directions: Below are a number of statements about how various
topics affect your personal beliefs. There are no right or wrong
answers. For every item there are a large number of people who
agree and disagree. Could you please put in the appropriate
bracket the choice you believe to be true?
Answer all the questions.

0	1	2	3	4	5
:	:	:	:	:	:
strongly disagree	generally disagree	somewhat disagree	somewhat agree	generally agree	strongly agree

---

1. I can anticipate difficulties and take action to avoid them. ( )

2. A great deal of what happens to me is probably just a matter
    of chance. ( )

3. Everyone knows that luck or chance determines one's future. ( )

4. I can control my problem(s) only if I have outside support. ( )

5. When I make plans, I am almost certain that I can make them
    work. ( )

6. My problem(s) will dominate me all my life. ( )

7. My mistakes and problems are my responsibility to deal with. ( )

8. Becoming a success is a matter of hard work, luck has little
    or nothing to do with it. ( )

9. My life is controlled by outside actions and events. ( )

10. People are victims of circumstance beyond their control. ( )

11. To continually manage my problems I need professional help. ( )

12. When I am under stress, the tightness in my muscles is due to
    things outside my control. ( )

13. I believe a person can really be the master of his fate. ( )

14. It is impossible to control my irregular and fast breathing
    when I am having difficulties. ( )

15. I understand why my problem(s) varies so much from one
    occasion to the next. ( )

16. I am confident of being able to deal successfully with future
    problems. ( )

17. In my case maintaining control over my problem(s) is due
    mostly to luck. ( )

Interpersonal Dependency Inventory

INSTRUCTIONS: 48 statements are presented below. Please read each one and decide whether or not it is characteristic of your attitudes, feelings, or behavior. Then assign a rating to every statement, using the values given below:

      4 = very characteristic of me
      3 = quite characteristic of me
      2 = somewhat characteristic of me
      1 = not characteristic of me

_____ 1. I prefer to be by myself.

_____ 2. When I have a decision to make, I always ask for advice.

_____ 3. I do my best work when I know it will be appreciated.

_____ 4. I can't stand being fussed over when I am sick.

_____ 5. I would rather be a follower than a leader.

_____ 6. I believe people could do a lot more for me if they wanted to.

_____ 7. As a child, pleasing my parents was very important to me.

_____ 8. I don't need other people to make me feel good.

_____ 9. Disapproval by someone I care about is very painful to me.

_____ 10. I feel confident of my ability to deal with most of the personal problems I am likely to meet in life.

_____ 11. I'm the only person I want to please.

_____ 12. The idea of losing a close friend is terrifying to me.

_____ 13. I am quick to agree with the opinions expressed by others.

_____ 14. I rely only on myself.

_____ 15. I would be completely lost if I didn't have someone special.

_____ 16. I get upset when someone discovers a mistake I've made.

_____ 17. It is hard for me to ask someone for a favor.

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_____ 18. I hate it when people offer me sympathy.

_____ 19. I easily get discouraged when I don't get what I need from others.

_____ 20. In an argument, I give up easily.

_____ 21. I don't need much from people.

_____ 22. I must have one person who is very special to me.

_____ 23. When I go to a party, I expect that the other people will like me.

_____ 24. I feel better when I know someone else is in command.

_____ 25. When I am sick, I prefer that my friends leave me alone.

_____ 26. I'm never happier than when people say I've done a good job.

_____ 27. It is hard for me to make up my mind about a TV show or movie until I know what other people think.

_____ 28. I am willing to disregard other people's feelings on order to accomplish something that's important to me.

_____ 29. I need to have one person who puts me above all others.

_____ 30. In social situations I tend to be very self-conscious.

_____ 31. I don't need anyone.

_____ 32. I have a lot of trouble making decisions by myself.

_____ 33. I tend to imagine the worst if a loved one doesn't arrive when expected.

_____ 34. Even when things go wrong I can get along without asking for help from my friends.

_____ 35. I tend to expect too much from others.

_____ 36. I don't like to buy clothes by myself.

_____ 37. I tend to be a loner.

_____ 38. I feel that I never really get all that I need from people.

_____ 39. When I meet new people, I'm afraid that I won't do the right thing.

_____ 40. Even if most people turned against me, I could still go on if someone I love stood by me.

_____ 41. I would rather stay free of involvements with others than to risk disappointments.

_____ 42. What people think of me doesn't affect how I feel.

_____ 43. I think that most people don't realize how easily they can hurt me.

_____ 44. I am very confident about my own judgment.

_____ 45. I have always had a terrible fear that I will lose the love and support of people I desperately need.

_____ 46. I don't have what it takes to be a good leader.

_____ 47. I would feel helpless if deserted by someone I love.

_____ 48. What other people say doesn't bother me.

APPENDIX D:

DESCRIPTIVE STATISTICS AND COMPLETE CORRELATION MATRIX (N=94)

DESCRIPTIVE STATISTICS (N=94)

VARIABLE NAME	MEAN	STANDARD DEVIATION	SMALLEST CASE	SMALLEST VALUE	LARGEST CASE	LARGEST VALUE
sex	1.53	0.50	1	1.00	3	2.00
group	1.54	0.50	1	1.00	61	2.00
DISQLAGM	8.73	9.14	2	-9.65	6	34.84
asstlagm	3.83	6.51	110	-1.10	70	20.42
DIS-INTM	-4.90	6.41	18	-26.94	2	9.61
intkage	37.19	11.20	96	19.00	37	65.00
SCHIZYN	0.57	0.50	1	0.00	2	1.00
MOODYN	0.35	0.48	1	0.00	3	1.00
MARRYN	0.15	0.36	1	0.00	9	1.00
FAMINVYN	0.80	0.40	1	0.00	2	1.00
KIDSYN	0.46	0.50	3	0.00	1	1.00
HSYN	0.55	0.50	1	0.00	3	1.00
#kids	1.11	1.44	3	0.00	9	5.00
OPT	17.46	6.32	114	1.00	61	32.00
LOCB	33.40	11.80	71	4.00	28	63.00
EMOREL	45.66	10.85	95	24.00	1	69.00
SOSELCON	37.24	4.50	16	28.00	51	49.00
AUT	27.03	6.28	38	16.00	34	46.00
INTDEP	201.26	35.87	57	122.00	28	285.00
status	1.85	0.36	28	1.00	1	2.00
MHC	1.53	0.50	6	1.00	1	2.00
SRTHOSHX	2.64	1.08	19	1.00	9	6.48
REHOSPYN	0.48	0.50	2	0.00	1	1.00
#REHOS>1	0.87	1.43	2	0.00	10	6.00
SRT#REHO	0.87	1.06	2	0.00	71	5.10

COMPLETE CORRELATION MATRIX (N=94)

	sex	group	DISQLAGM	asstlagm	DIS-INTM	intkage
sex	1.00					
group	-.01	1.00				
DISQLAGM	.04	-.09	1.00			
asstlagm	.04	-.09	.72	1.00		
DIS-INTM	-.01	.04	-.69	-.00	1.00	
intkage	.29	-.03	-.04	-.00	.06	1.00
SCHIZYN	-.38	-.06	.12	.01	-.17	-.12
MOODYN	.38	.14	-.06	.03	.12	.20
MARRYN	.09	.08	.00	-.03	-.04	.37
FAMINVYN	-.05	.07	-.02	.13	.17	-.00
KIDSYN	.48	-.06	.10	.11	-.03	.59
HSYN	.10	.12	-.08	-.17	-.07	-.24
#kids	.38	-.10	.10	.08	-.06	.63
OPT	-.14	.06	.16	.10	-.12	-.11
LOCB	.12	-.15	-.15	-.16	.05	.08
EMOREL	.03	.02	-.13	-.17	.02	.10
SOSELCON	.03	-.00	-.10	-.12	.02	.15
AUT	-.08	-.10	-.09	.01	.15	.02
INTDEP	.01	-.00	-.15	-.16	.04	.12
status	.21	.10	.32	.14	-.31	.14
MHC	-.07	.02	-.07	-.09	-.00	.02
SRTHOSHX	-.03	.01	-.08	-.06	.06	.25
REHOSPYN	-.08	.03	-.09	-.11	.01	.04
#REHOS>1	.10	.10	-.19	-.21	.06	-.02
SRT#REHO	-.01	.05	-.19	-.16	.11	-.02

	SCHIZYN	MOODYN	MARRYN	FAMINVYN	KIDSYN	HSYN
SCHIZYN	1.00					
MOODYN	-.85	1.00				
MARRYN	-.12	.19	1.00			
FAMINVYN	-.00	.04	.14	1.00		
KIDSYN	-.25	.31	.28	-.02	1.00	
HSYN	.01	.03	-.10	-.08	-.03	1.00
#kids	-.15	.23	.26	-.06	.84	-.10
OPT	.22	-.18	.06	.02	-.11	.06
LOCB	-.05	.04	.13	-.06	-.02	-.08
EMOREL	-.02	.03	.11	-.20	.08	-.04
SOSELCON	.02	-.03	-.03	-.18	.01	-.01
AUT	-.01	.00	.03	-.13	.07	.10
INTDEP	-.02	.03	.10	-.23	.08	-.02
status	-.18	.12	.01	-.14	.14	-.08
MHC	.06	-.05	.18	.11	.11	.17
SRTHOSHX	.02	-.00	.19	.04	.05	-.25
REHOSPYN	.09	-.17	.08	-.10	-.11	.13
#REHOS>1	.07	-.12	-.03	.01	-.04	.21
SRT#REHO	.10	-.20	-.02	-.03	-.15	.21

	#kids	OPT	LOCB	EMOREL	SOSELCON	AUT
#kids	1.00					
OPT	-.12	1.00				
LOCB	-.01	-.65	1.00			
EMOREL	-.05	-.31	.46	1.00		
SOSELCON	-.03	-.09	.24	.49	1.00	
AUT	-.01	.04	-.04	.02	.32	1.00
INTDEP	-.05	-.29	.44	.97	.62	.23
status	.16	-.07	-.01	-.06	.00	.06
MHC	.18	-.01	.12	.12	-.01	-.17
SRTHOSHX	.04	-.06	.07	.10	.01	-.05
REHOSPYN	-.15	.02	.04	.11	.03	.19
#REHOS>1	-.04	-.00	.02	.04	-.05	.06
SRT#REHO	-.19	.05	-.02	.07	.00	.17

	INTDEP	status	MHC	SRTHOSHX	REHOSPYN	#REHOS>1
INTDEP	1.00					
status	-.02	1.00				
MHC	.01	.09	1.00			
SRTHOSHX	.05	-.00	-.06	1.00		
REHOSPYN	.16	.04	-.23	.24	1.00	
#REHOS>1	.04	.07	-.08	.25	.64	1.00
SRT#REHO	.11	-.03	-.23	.26	.85	.77

	SRT#REHO
SRT#REHO	1.00

APPENDIX E:

RESULTS OF ALL POSSIBLE SUBSETS MULTIVARIATE REGRESSION ANALYSES

(N=94)

ALL POSSIBLE SUBSETS REGRESSION ANALYSES

KEY

NUMBER	PREDICTOR VARIABLE NAME
1	HOSPITALIZATION HISTORY (SQUARE ROOT FORM)
2	HIGH SCHOOL COMPLETION (YES / NO)
3	MOOD DISORDER (YES / NO)
4	SCHIZOPHRENIA (YES / NO)
5	MENTAL HEALTH CENTRE (NEW WESTMINSTER / SURREY)
6	ASSERTION OF AUTONOMY (IDI)
7	EMOTIONAL RELIANCE ON ANOTHER PERSON (IDI)
8	LACK OF SOCIAL SELF-CONFIDENCE (IDI)
9	LOCUS OF CONTROL OF BEHAVIOR SCALE
10	OPTIMISM (LIFE ORIENTATION TEST)
11	AGE AT INTAKE
12	CHILDREN (YES / NO)
13	MARRIED (YES / NO)
14	MONTHS BETWEEN DISCHARGE AND QUESTIONNAIRE COMPLETION
15	SEX
16	STATUS (INPATIENT / OUTPATIENT)
17	FAMILY INVOLVED (YES / NO)
18	NUMBER OF CHILDREN
19	MONTHS BETWEEN DISCHARGE AND INTAKE
20	GROUP (EXPERIMENTAL / CONTROL)

REGRESSION #1:

DEPENDENT VARIABLE = REHOSPITALZIED YES /NO

SUBSETS WITH 1 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.0484	X																			
.0447					X															
.0254						X														
.0182				X																
.0105																X				
.0070			X																	
.0015											X									
.0007							X													
-.0006														X						
-.0022					X															

SUBSETS WITH 2 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.0874	X				X															
.0800	X					X														
.0787	X	X																		
.0676				X	X															
.0672	X		X																	
.0654		X			X															
.0624	X																X			
.0575					X	X														
.0533					X		X													
.0532	X											X								

SUBSETS WITH 3 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1353	X	X			X															
.1107	X		X		X															
.1058	X				X	X														
.1044	X	X			X															
.1006	X	X	X																	
.0997	X		X		X															
.0942	X				X												X			
.0916		X	X		X															
.0915	X				X												X			
.0902	X				X	X														

SUBSETS WITH 4 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1633	X	X	X		X															
.1459	X	X			X	X														
.1409	X	X			X		X													
.1397	X	X			X										X					
.1364	X	X			X								X							
.1361	X	X		X	X															
.1339	X	X			X														X	
.1335	X	X			X						X									
.1332	X	X			X											X				
.1313	X	X			X				X											

SUBSETS WITH 5 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1765	X	X	X		X								X							
.1738	X	X	X		X	X														
.1714	X	X	X		X		X													
.1690	X	X	X	X	X															
.1668	X	X	X		X											X				
.1613	X	X	X		X				X											
.1601	X	X	X		X									X						
.1593	X	X	X		X						X									
.1571	X	X	X		X												X			
.1564	X	X	X		X										X					

SUBSETS WITH 6 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1856	X	X	X	X	X								X							
.1834	X	X	X		X	X							X							
.1827	X	X	X		X		X						X							
.1820	X	X	X		X								X			X				
.1801	X	X	X		X	X	X													
.1791	X	X	X	X	X	X														
.1778	X	X	X		X		X										X			
.1775	X	X	X	X	X		X													
.1746	X	X	X		X	X										X				
.1744	X	X	X		X								X	X						

SUBSETS WITH 7 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1922	X	X	X	X	X		X						X							
.1920	X	X	X	X	X	X							X							
.1910	X	X	X		X		X						X			X				
.1907	X	X	X		X								X	X		X				
.1882	X	X	X		X	X	X						X							
.1871	X	X	X	X	X								X			X				
.1861	X	X	X		X	X							X			X				
.1859	X	X	X	X	X	X	X													
.1836	X	X	X		X	X	X									X				
.1822	X	X	X		X								X			X			X	

SUBSETS WITH 8 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1972	X	X	X	X	X	X	X						X							
.1965	X	X	X		X		X						X	X		X				
.1961	X	X	X	X	X		X						X			X				
.1936	X	X	X		X	X	X						X			X				
.1920	X	X	X		X		X						X			X			X	
.1911	X	X	X	X	X	X							X			X				
.1908	X	X	X		X	X							X	X		X				
.1902	X	X	X	X	X								X	X		X				
.1899	X	X	X		X		X						X		X	X				
.1892	X	X	X	X	X		X						X		X					

SUBSETS WITH 9 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1985	X	X	X	X	X	X	X						X			X				
.1974	X	X	X	X	X		X						X		X	X				
.1965	X	X	X	X	X		X						X	X		X				
.1962	X	X	X	X	X	X	X	X					X							
.1958	X	X	X		X		X						X	X	X	X				
.1957	X	X	X		X	X	X						X	X		X				
.1932	X	X	X	X	X	X	X					X	X							
.1931	X	X	X	X	X		X						X			X		X		
.1929	X	X	X		X	X	X	X					X			X				
.1925	X	X	X	X	X		X					X	X			X				

REGRESSION #2:

DEPENDENT VARIABLE = # REHOSPITALIZATIONS (SQUARE ROOT FORM).

SUBSETS WITH 1 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.0587		X																		
.0425					X															
.0351			X																	
.0306				X																
.0252																	X			
.0246														X						
.0167							X													
.0126												X								
.0003																			X	
-.0003				X																

SUBSETS WITH 2 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1330	X	X																		
.0985		X			X															
.0951	X				X															
.0901	X		X																	
.0887	X																X			
.0814	X					X														
.0787			X		X															
.0764	X													X						
.0762	X											X								
.0742					X									X						

SUBSETS WITH 3 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1944	X	X			X															
.1699	X	X	X																	
.1544	X	X															X			
.1494	X	X										X								
.1483	X	X				X														
.1427	X	X												X						
.1406		X	X		X															
.1347	X	X																X		
.1326	X	X		X																
.1318	X		X		X															

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SUBSETS WITH 4 VARIABLES

ADJUSTED PREDICTOR VARIABLES

R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.2390	X	X	X		X															
.2094	X	X			X									X						
.2023	X	X			X							X								
.2015	X	X			X													X		
.1978	X	X		X	X															
.1975	X	X			X														X	
.1971	X	X			X	X														
.1921	X	X			X		X													
.1902	X	X	X	X																
.1881	X	X			X								X							

SUBSETS WITH 5 VARIABLES

ADJUSTED PREDICTOR VARIABLES

R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.2595	X	X	X		X									X						
.2584	X	X	X	X	X															
.2499	X	X	X		X													X		
.2418	X	X	X		X	X														
.2388	X	X	X		X		X													
.2357	X	X	X		X												X			
.2339	X	X	X		X						X									
.2339	X	X	X		X							X								
.2328	X	X	X		X										X					
.2325	X	X	X		X															X

SUBSETS WITH 6 VARIABLES

ADJUSTED PREDICTOR VARIABLES

R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.2717	X	X	X	X	X									X						
.2640	X	X	X	X	X													X		
.2636	X	X	X		X									X		X				
.2610	X	X	X	X	X	X														
.2590	X	X	X		X	X								X						
.2588	X	X	X	X	X		X													
.2562	X	X	X		X		X							X						
.2554	X	X	X		X								X	X						
.2553	X	X	X	X	X								X							
.2542	X	X	X	X	X															X

REGRESSION #3:

DEPENDENT VARIABLE = # REHOSPITALIZATIONS $\geq$ 1 DAY DURATION

SUBSETS WITH 1 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.0515	X																			
.0316		X																		
.0252													X							
.0042			X																	
-.0012																				X
-.0016														X						
-.0048					X															
-.0053				X																
-.0063																X				
-.0070							X													

SUBSETS WITH 2 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1188	X	X																		
.0701	X												X							
.0563	X		X																	
.0522	X													X						
.0515		X											X							
.0503	X																			X
.0480	X										X									
.0469	X					X														
.0465	X											X								
.0461	X			X																

SUBSETS WITH 3 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1294	X	X											X							
.1268	X	X	X																	
.1207	X	X			X															
.1175	X	X														X				
.1154	X	X												X						
.1136	X	X		X																
.1128	X	X																		X
.1123	X	X										X								
.1122	X	X																X		
.1118	X	X				X														

SUBSETS WITH 4 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1406	X	X												X		X				
.1400	X	X	X											X						
.1369	X	X	X												X					
.1334	X	X			X									X						
.1305	X	X	X		X															
.1291	X	X	X													X				
.1272	X	X		X										X						
.1267	X	X												X	X					
.1251	X	X	X	X																
.1239	X	X						X						X						

SUBSETS WITH 5 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1587	X	X	X											X		X				
.1529	X	X	X											X	X					
.1496	X	X			X									X		X				
.1464	X	X		X										X		X				
.1462	X	X	X		X									X						
.1385	X	X	X		X										X					
.1361	X	X	X		X											X				
.1359	X	X						X						X		X				
.1355	X	X	X												X					X
.1352	X	X	X					X						X						

SUBSETS WITH 6 VARIABLES

ADJUSTED R-SQUARED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1720	X	X	X		X									X		X				
.1643	X	X	X											X	X	X				
.1593	X	X		X	X									X		X				
.1568	X	X	X		X									X	X					
.1551	X	X	X					X						X		X				
.1514	X	X	X											X		X	X			
.1512	X	X	X											X		X				X
.1502	X	X	X	X										X		X				
.1500	X	X	X								X			X		X				
.1495	X	X	X										X	X		X				

SUBSETS WITH 7 VARIABLES

ADJUSTED R-SQUARED	PREDICTOR VARIABLES																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
.1745	X	X	X		X									X	X	X				
.1690	X	X	X		X		X							X		X				
.1677	X	X	X		X									X		X	X			
.1644	X	X	X		X									X		X		X		
.1643	X	X	X		X									X		X				X
.1633	X	X	X		X	X								X		X				
.1630	X	X	X	X	X									X		X				
.1630	X	X	X		X							X		X		X				
.1628	X	X	X		X						X			X		X				
.1627	X	X	X		X									X		X			X	

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APPENDIX F:

RESULTS OF EXPLORATORY FACTOR ANALYSIS (N=94):

AMOUNT OF VARIANCE EXPLAINED BY EACH OF THE UNROTATED FACTORS

RESULTS OF EXPLORATORY FACTOR ANALYSIS (N=94)

FACTOR	VARIANCE EXPLAINED (EIGEN VALUES)	CUMULATIVE PROPORTION OF VARIANCE IN DATA SPACE
1	3.51	0.15
2	2.85	0.28
3	2.23	0.37
4	1.96	0.46
5	1.71	0.53
6	1.45	0.60
7	1.37	0.66
8	1.21	0.71
9	0.96	0.75
10	0.89	0.79
11	0.81	0.82
12	0.72	0.85
13	0.62	0.88
14	0.57	0.91
15	0.46	0.93
16	0.36	0.94
17	0.30	0.96
18	0.26	0.97
19	0.23	0.98
20	0.22	0.99
21	0.13	0.99
22	0.11	0.99
23	0.09	1.00

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