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Nancy L. Mikolaitis

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POST-HOSPITAL ADJUSTMENT SELF-EFFICACY OF PSYCHIATRIC PATIENTS: A PRELIMINARY STUDY

By

Nancy L. Mikolaitis

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ABSTRACT

POST-HOSPITAL ADJUSTMENT SELF-EFFICACY OF PSYCHIATRIC
PATIENTS: A PRELIMINARY STUDY

By

Nancy L. Mikolaitis

High rates of hospital recidivism among the psychiatric population have remained a persistent problem over the past 30 years. Although previous researchers have found several social, psychosocial, and psychiatric correlates of psychiatric hospital readmission, results have often been confusing or unimpressive. Several investigators have called for further study of the basic cognitive and social processes potentially mediating the post-hospital adjustment of psychiatric patients, employing greater theoretical and methodological precision.

One approach possessing both theoretical and applied promise in advancing knowledge about the psychiatric recovery process is Bandura's self-efficacy theory. This theoretical model is part of a larger social cognitive model of human behavior.

The purpose of this investigation was to develop a measure of psychiatric post-hospital adjustment self-efficacy (PHASE) and to assess its internal consistency and preliminary construct validity.

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A 40-item PHASE Scale was developed based on a comprehensive review of the literature and clinical expertise.

A sample of 103 psychiatric inpatients completed the PHASE Scale and the Brief Symptom Inventory, a measure of symptom distress, before discharge from an acute-care psychiatric facility. Data on other aspects of patients' current and past levels of psychiatric functioning were obtained from medical records.

The results of correlational analyses indicated that the PHASE Scale is a highly reliable instrument, with a coefficient alpha of .96. Findings pertaining to the construct validity of the PHASE Scale were mixed. Relationships between PHASE Scale scores and past performance variables were generally nonsignificant. A notable exception was the finding that patients who were psychotic during the current admission reported significantly higher self-efficacy than patients who were not psychotic. The finding of a significant inverse relationship between perceptions of self-efficacy and severity of symptom distress at discharge provided some support for the construct validity of the PHASE Scale.

Results of the supplementary intercorrelational analyses among past performance variables and internal arousal cues supported the theoretical hypothesis that the two sources of self-efficacy represent distinct constructs. A supplementary factor analysis suggested that post-hospital adjustment self-efficacy may be a unidimensional construct rather than a combination of subcomponents.

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CHAPTER I

INTRODUCTION

Statement of the Problem

In traditional learning theory, human behavior was viewed as controlled and shaped by the environment. The environment was seen as a set of stimuli that exerted control in two ways: (a) forward, by eliciting a behavior or by signaling that a particular behavior would be reinforced; and (b) backward, by reinforcing that behavior after it occurred (Miller, 1983). Early studies of classical and operant conditioning generated widespread belief in the idea that learning consists of the association between a stimulus and a response. In this tradition, learning theorists ascribed to a view of people as passive learners, driven either by innate forces or automatically shaped and controlled by external stimuli and their contingent reinforcements.

Social learning theory emerged in the 1940s and 1950s as some researchers extended traditional learning theory and changed its focus to include socialization processes (Dollard & Miller, 1950), vicarious reinforcement (Bandura & Walters, 1963), and observational learning (Bandura, 1977a). These new directions recast the role of the environment as only one of many forces operating in any learning situation. In particular, social learning theorists stress that the

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forward and backward influence of the environment is cognitively mediated and that people are active, rather than passive, agents in determining their behavior.

The most recent developments in modern social learning theory have been advanced by the theoretical and empirical work of Albert Bandura. He has proposed a social cognitive theory that explains human functioning in terms of a causal model of triadic reciprocality in which behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other (Bandura, 1986).

One aspect of Bandura's broad social cognitive theory focuses on an area largely neglected by psychological theorists: the mechanisms governing the interrelationship between thought and action. Bandura (1977b) postulated that the most central and pervasive type of thought affecting human action is that of personal efficacy. Personal or self-efficacy is defined as people's judgments about their capabilities to execute tasks specific to a given domain of psychosocial functioning. The theory postulates that self-efficacy beliefs affect how people behave, their level of motivation and extent of effort, their thought patterns, and their emotional reactions in stressful situations. Behaviors, effort, thoughts, and affect, in turn, are linked to how well one functions in the specified domain of performance. Self-efficacy theory provides a common cognitive mechanism--what people think they can do under given circumstances--through which people influence their behavior and motivation.

Psychologists have applied self-efficacy theory to varied domains of psychosocial functioning, including anxiety disorders, depression, motivation, achievement behavior, career choice and development, and athletic attainments (Bandura, 1986). Another major line of inquiry involves the application of self-efficacy theory to various facets of health behavior, including relapse in smoking cessation, pain perception and management, control of eating and weight, success of recovery from myocardial infarction, and adherence to preventive health programs (O'Leary, 1985). Convergent findings in these diverse domains and populations lend broad support to the notion that perceived self-efficacy operates as a significant cognitive factor influencing human psychosocial behavior. Predictive success has been demonstrated across time, setting, performance variants, and expressive modalities. Moreover, treatments designed to alter self-efficacy using various modes of influence have been shown to predict change and rate of change in various behaviors (Bandura, 1986).

One particularly interesting area of study has focused on the influence of perceived self-efficacy on the process of relapse and recovery in health behavior. Empirical research on the applications of self-efficacy theory to relapse in smoking cessation (Colletti, Supnick, & Payne, 1985; DiClementi, 1981; McIntyre, Lichtenstein & Mermelstein, 1983) and post-coronary recovery (Taylor, Bandura, Ewart, Miller, & DeBusk, 1985) has indicated that perceived self-inefficacy increases vulnerability to relapse in smoking cessation

and that self-percepts of efficacy contribute to successful recovery from acute physical conditions. This research leads one to conjecture whether self-efficacy beliefs may mediate the process of relapse and recovery in other health behaviors and patient populations.

High rates of recidivism have been reported among hospitalized psychiatric patients for quite some time (Caton, Showlong, Fleiss, Barrow, & Goldstein, 1985). For example, Anthony, Buell, Sharratt, and Althoff (1972) reported readmission base rates of 30% to 40% and 40% to 50% for 6-month and 1-year post-hospital discharge periods, respectively. Several investigators have attempted to identify variables associated with recidivism, but few have explored the potential role of cognitive factors in mediating post-hospital adjustment behaviors associated with relapse or recovery in psychiatric patients.

Between 1955 and 1980 there was a 76% decrease in the end-of-year census of resident patients in state and county mental hospitals, from 559,000 to 133,500. Although annual resident census was decreasing, additions (admissions, readmissions, and returns from long-term leave) to state and county hospitals increased from 178,000 in 1955 to a peak of 415,600 in 1976, and had only declined to 378,000 in 1980 (Davis, 1984; National Institute of Mental Health, 1986). These trends reflect a shift toward shorter-term hospitalizations and a greater proportion of readmissions. These statistics suggest that factors affecting recidivism merit the attention of research in order to respond to the problem.

A great deal of research on the factors associated with recidivism has been conducted, focusing primarily on demographic or clinical variables, global measures of premorbid functioning, and a number of social-environmental variables, such as the effects of after-care programs. Although a variety of factors have been shown to be associated with outcome, results have often been confusing or unimpressive (Stoffelmayr, Dillavou, & Hunter, 1983).

The major prognostic indicators in the literature are indices of premorbid functioning. These indices are composite global ratings based on the individual's age, education, marital status, occupation, previous social functioning, and employment history. A strong positive relationship between premorbid functioning indices and outcome has been reported in the schizophrenic population in a number of studies (Stoffelmayr et al., 1983). More recently, Glick and Zigler (1986) reported that higher premorbid functioning was associated with more favorable outcome in nonschizophrenic psychiatric patients as well.

In 1977, Schizophrenia Bulletin published a major review of the literature on scales of premorbid adjustment and their role in the broader context of schizophrenia research. While acknowledging the prognostic value of premorbid adjustment in schizophrenia, the authors called attention to the fact that research has also demonstrated the complexity of recidivism processes and the existence of large gaps that remain in our knowledge (Strauss, Klorman, Kokes, & Sacksteder, 1977). In recommending directions for future research, the authors stated, "To clarify further the

possible links between premorbid adjustment, symptoms, and outcome, improved measures of premorbid adjustment focusing on basic perceptual, cognitive, and social relationship processes will be needed" (p. 242).

In addition to the need for greater attention to basic cognitive and social processes in psychiatric outcome, a number of authors have emphasized the need for greater specificity and precision in operationalizing prognostic constructs (Stoffelmayr et al., 1983). The lack of theoretical direction in previous studies of predictor variables has also been criticized as a major shortcoming in this body of literature (Avison & Speechley, 1987).

Thus far, only a few investigators have attempted to examine and measure cognitive processes from explicit theoretical perspectives in the inpatient psychiatric population. Archer (1980), for example, investigated the possibility that Rotter's (1966) theoretical construct, locus of control, and trait anxiety levels are related to psychopathology in psychiatric inpatients. He reported the results of univariate and multivariate analyses showing that higher trait anxiety levels and more external locus of control orientations were related to greater psychopathology on multiple Minnesota Multiphasic Personality Inventory (MMPI) scale indices.

Perhaps the major area of research emphasizing the importance of cognitive processes in the etiology, maintenance, and treatment of psychopathology has focused on depressive disorders. A number of studies have used cognitive theoretical frameworks, for example,

Beck's (1967) cognitive theory of depression, Seligman's (1974) learned helplessness theory of depression, and Abramson, Seligman, and Teasdale's (1978) attributional reformulation of learned helplessness and depression theory. Most of this research has been directed toward outpatient populations (Taylor & Marshall, 1977), and only a few studies linking cognitive patterns to outcome for inpatients were found in this literature (Dobson & Shaw, 1986; Eaves & Rush, 1984; Hamilton & Abramson, 1983). Nevertheless, the findings of this research lend strong support to the view that cognition affects depressed mood among psychiatric patients. Based on their results, investigators have urged others to explore further the relationships between depressive psychological conditions and cognitions (Dobson & Shaw, 1986; Hamilton & Abramson, 1983).

The present study is one step toward responding to this research need by developing and investigating a measure of one common cognitive mechanism--perceptions of self-efficacy--that may mediate the relationship between thoughts and the psychiatric recovery process. Moreover, this study would enable a focus on a population, psychiatric inpatients, that both encompasses a variety of disorders and has been the subject of few investigations that explore the role of more "normal" cognitive mechanisms that may influence relapse and recovery.

The potential value of self-efficacy theory in both hospital treatment and after-care planning is another important reason this study is needed. Based on research on substance abuse, Wilson (1978) concluded that self-efficacy theory "provides a plausible and

testable framework for reconceptualizing some of the processes governing relapse phenomena and a basis for effective intervention with lasting therapeutic effects" (p. 223). Bandura (1986) specified four sources of information through which self-efficacy is generated and can be modified. These modes of influence provide a basis for creating both performance-based and symbolic therapeutic interventions to modify self-efficacy perceptions by behavioral means. Thus, research on the role of self-efficacy in psychiatric post-hospital adjustment is needed in order to evaluate the potential therapeutic implications of the theory for this population.

Purpose of the Study

The present study is the first step in establishing a basis for investigating the broad question of whether self-efficacy beliefs constitute a cognitive mechanism that mediates outcome among hospitalized psychiatric patients after discharge to the community. To accomplish this, an instrument that measures patients' judgements about their capabilities to perform tasks associated with post-hospital adjustment is needed. A primary purpose of this study was to develop a measure of Post-Hospital Adjustment Self-Efficacy (PHASE) and to provide some initial reliability data for the instrument.

Self-efficacy theory postulates specific sources of efficacy information: (a) past performance experiences, (b) modeled events, (c) social persuasion, and (d) internal arousal cues. The theory

also describes various personal, social, situational, and temporal factors influencing the formulation of an individual's self-efficacy percepts in a given domain of functioning. In the domain of post-hospital adjustment, patient characteristics such as the number of previous psychiatric hospitalizations, psychotic or nonpsychotic diagnosis, level of adaptive functioning, and level of symptom distress at discharge represent variables that may either convey self-efficacy information or influence the cognitive appraisal of self-efficacy as postulated by the theory. Another purpose of this study was to explore how these patient characteristics are associated with perceptions of self-efficacy concerning post-hospital adjustment, thereby providing some initial construct-validity data for the instrument.

The present study was conceptualized as the first phase of a research effort on the relevance of self-efficacy theory to psychiatric patients' adjustment after discharge from the hospital. Specifically, this study attempted to identify behavioral tasks relevant to post-hospital adjustment, to measure and describe the strength of self-efficacy judgements concerning these tasks, and to describe patient characteristics associated with potential differences in self-efficacy beliefs in a sample of psychiatric patients about to be discharged from the hospital. If the results of this study support the initial reliability and validity of the PHASE Scale, a foundation would be established for further predictive research with the instrument.

Research Questions

In summary, two basic research questions served as a guide for the present study:

1. Can an internally consistent instrument that attempts to measure the self-efficacy beliefs of hospitalized psychiatric patients concerning post-hospital adjustment behaviors be constructed?

2. Are there differences in the characteristics of hospital-ized psychiatric patients that can be associated with differences in the strength of their self-efficacy beliefs as measured by this instrument?

Research Hypotheses

One set of hypotheses was derived to address the first research question:

Reliability

Hypothesis 1: The internal consistency of the items on the PHASE Scale will be sufficiently high to infer homogeneity of the construct of self-efficacy in post-hospital adjustment.

Content Validity

Hypothesis 2: The content validity of the items on the PHASE Scale will be indicative of self-efficacy in the context of post-hospital adjustment.

Another set of hypotheses was derived to address the second research question. These were formulated to test a general theoretical hypothesis that psychiatric post-hospital adjustment self-efficacy would be higher for patients with more successful past

performance experiences and lower internal arousal cues than for patients with poorer past performance and higher internal arousal.

Construct Validity

Hypothesis 3: Number of previous psychiatric hospitalizations will be negatively related to total scores on the PHASE Scale, with patients who have had a greater number of previous hospitalizations tending to score lower than patients with fewer or no previous hospitalizations.

Hypothesis 4: Psychotic symptoms during the current hospitalization will be negatively related to total scores on the PHASE Scale, with patients who were psychotic tending to score lower than patients who were nonpsychotic.

Hypothesis 5: Level of adaptive functioning during the year previous to this hospital admission will be positively related to total scores on the PHASE Scale, with patients who have had higher levels of adaptive functioning tending to score higher than patients with lower levels of adaptive functioning.

Hypothesis 6: Level of adaptive functioning upon discharge from the current hospitalization will be positively related to total scores on the PHASE Scale, with patients who have achieved higher levels of functioning tending to score higher than patients who have achieved lower levels of functioning.

Hypothesis 7: Level of symptom distress at time of discharge will be negatively related to total scores on the PHASE Scale, with patients reporting higher levels of symptom distress tending to score lower than patients with lower levels of symptom distress.

Definition of Terms

Internal arousal cues--the perception of psychological symptom distress, as measured by the patient's self-report score on the Brief Symptom Inventory (BSI).

Past performance experiences--(a) number of previous psychiatric hospitalizations as reflected in the medical record; (b) psychotic versus nonpsychotic symptomatology during the current hospitalization as indicated by hospital treatment staff judgement;

and (c) level of adaptive functioning as reflected in the patient's psychological, social, and occupational functioning on a continuum of mental health-illness, as measured by hospital treatment staff ratings of a patient's adaptive functioning according to the Global Assessment Scale (GAS).

Post-hospital adjustment self-efficacy--the perception of one's confidence in his or her capabilities to execute the actions required to adjust to life successfully in the community after discharge from a psychiatric hospital, as measured by the patient's self-report score on the PHASE Scale.

Overview

In Chapter I, the topic to be investigated was presented, as well as the importance and purpose of the study, the research questions and hypotheses, and definitions of terms. In Chapter II, literature on the theory and empirical evidence framing the research is reviewed. The psychiatric recidivism literature, which provides the framework for instrument content development, is also reviewed. Chapter III presents the overall design and methodology of the study, including procedures used in constructing the PHASE Scale. In Chapter IV, the findings of the reliability and validity analyses are presented. Chapter V contains a summary and discussion of the results, the limitations of the study, and implications for future research.

CHAPTER II

REVIEW OF LITERATURE

In the following review, two major areas of the literature are examined. First, the literature on self-efficacy theory is summarized, followed by a presentation of the empirical research that applies self-efficacy to relevant domains of psychosocial functioning. Second, research on the factors related to the process of relapse and recovery in the inpatient psychiatric population is covered. Unless otherwise noted, an alpha level < .05 is used in citing significant findings.

Self-Efficacy Theory

The concept of self-efficacy was developed in the context of social cognitive theory as a mechanism that mediates the relationship between knowledge and action (Bandura, 1977b). The theory addresses how people judge their capabilities and how their self-percepts of efficacy affect their motivation and behavior. According to the theory, dealing with one's environment is not simply a matter of knowing what to do. Rather, competent functioning calls for both skills and appropriate self-appraisal of capabilities to use those skills effectively. Self-efficacy is defined as "people's beliefs in their capabilities to organize and

execute certain courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Strong beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands constitute high self-efficacy. In contrast, self-doubts concerning one's capabilities reflect low self-efficacy. Self-efficacy beliefs are specific to particular domains of psychosocial functioning and may vary widely across different domains and various environmental situations for the same individual. Further, different individuals with comparable skills may perform at varying levels of success because their performance is partially governed by varying judgements of their operative capabilities (Bandura, 1986; Collins, 1982).

An important distinction is made in the theory between self-efficacy judgements and outcome expectations. "Perceived self-efficacy is a judgement of one's capability to accomplish a certain level of performance, whereas an outcome expectation is a judgement of the likely consequence such behavior will produce" (Bandura, 1986, p. 391). Because people rely on self-efficacy judgements in deciding the course of their actions and usually see outcomes as contingent on the adequacy of their performance, the theory views outcome expectations as dependent, in part, on one's performance judgements.

Self-efficacy beliefs affect what people choose to do and how much effort they expend in what they have undertaken, as well as their thought patterns and the emotional reactions they experience

in stressful situations. People tend to avoid situations and activities they believe exceed their capabilities, but they choose and engage in tasks they believe themselves capable of handling. The stronger their self-efficacy beliefs, the more they expend effort and persist in these efforts; perceived self-inefficacy leads people to give up easily and limits their potential to increase their positive self-percepts through mastery experiences. Similarly, people with a strong sense of personal efficacy channel their thinking into attending to the demands of the situation, whereas inefficacious judgements lead people to dwell on their perceived personal deficiencies and potential difficulties in a given situation. On the emotional level, efficacious individuals experience little stress and anxiety in taxing situations; those who regard themselves inefficaciously, however, approach the tasks before them with considerable anxiety and distress (Bandura, 1986).

Bandura (1986) hypothesized a number of factors that may affect the strength of the relationship between self-efficacy beliefs and action: (a) higher self-efficacy tends to foster the development of necessary subskills required for more complex performance, while lower self-efficacy hinders the development of such skills; (b) efficacious individuals who possess requisite skills for task performance may be hindered either by disincentives, such as lack of equipment or other resources, or by external constraints of a physical or social nature; (c) temporal disparities may mediate the relationship between self-percepts of efficacy and action, although

the most relevant factor is the potency of the intervening experiences; (d) faulty assessments of efficacy or of performance may result in variations in the correspondence between self-efficacy judgements and performance; (e) discrepancies between self-efficacy judgment and performance may arise when either the tasks or the circumstances under which they are performed are ambiguous; and (f) self-efficacy may be misjudged if faulty self-knowledge distorts self-appraisal.

Sources of Self-Efficacy Information

Bandura (1977b) postulated that self-efficacy is based on four principal sources of information or modes of influence: (a) past mastery experience, (b) vicarious experience, (c) verbal persuasion, and (d) physiological state. People's beliefs about their efficacy can also be modified through these four modes.

Mastery experiences, or enactive attainments, provide the most influential source of efficacy information because they reflect actual performance accomplishments. Successes build a strong sense of self-efficacy. Failures undermine it, especially if they occur early in the course of events and do not reflect lack of effort or adverse external circumstances (Bandura, 1986).

Modeling can also raise or lower self-appraisals of efficacy because people partly judge their capabilities in comparison with others. Seeing or visualizing other similar people perform activities successfully can raise the observer's self-efficacy beliefs that he or she may also be able to master comparable

activities. Conversely, seeing similar others fail despite high effort lowers observers' beliefs in their own capabilities. Modeling information can alter self-efficacy in ways other than the social comparison modality. Models can convey information about the environmental demands observers may face and teach them competencies and effective strategies for dealing with difficult situations. Although Bandura (1986) viewed vicarious experiences as generally weaker in effect than direct ones, he maintained that vicariously derived information can augment mastery-experience-derived self-efficacy or diminish the effects of repeated failure experiences on self-efficacy.

Bandura (1986) asserted that self-appraisals are based partly on the opinions of others who presumably possess evaluative competence. Social persuasion, or trying to convince people that they possess the capabilities to achieve what they seek, is postulated as a third mode of influencing self-efficacy. Bandura stated that persuasive boosts can mobilize greater sustained effort, which, in turn, may lead to success experiences, thus promoting development of skills and a sense of personal efficacy. On the other hand, unrealistic raising of beliefs can undermine personal efficacy if it leads to failure experiences.

According to self-efficacy theory, people also rely partly on inferences from their physiological state in judging their capabilities. Experiencing somatic arousal or distressful symptomatology can be interpreted as a sign of vulnerability to dysfunction. When people become aware of unpleasant emotional

arousal, they are likely to doubt their behavioral competence. The influence of physiological state extends beyond autonomic arousal to other physiological indicants, depending on the activities in question. For example, in activities involving strength and stamina, perceived efficacy is influenced by such experiences as fatigue and pain (Bandura, 1986; Maddux & Stanley, 1986). Thus, changing people's physiological reactions and how they interpret their bodily states is a fourth way of modifying perceived self-efficacy.

Cognitive Processing of Self-Efficacy Information

The sources described above convey efficacy information, but how this information is integrated into one's self-efficacy judgements depends on the cognitive appraisal processes of the individual. A variety of factors, including personal, social, situational, and temporal circumstances under which events occur, affect how this information will be cognitively appraised by each individual (Bandura, 1986). Some of the factors affecting people's judgements of self-efficacy from mastery experiences, for example, include the difficulty of the task, the amount of effort expended, their physical and psychological condition at the time, the amount of external aid received, the situational circumstances of their performance, the temporal patterns of their successes and failures, and the adequacy with which they monitor and recall their performance experiences (Bandura, 1984).

Dimensions of Self-Efficacy

Self-efficacy beliefs are viewed as varying along three major dimensions: magnitude, strength, and generality (Bandura, 1977b, 1986). People may vary in the magnitude of self-efficacy judgements according to the difficulty or complexity or stressfulness of particular tasks. They may also differ in the generality of their self-judged efficacy: Some may believe that they can successfully execute only limited kinds of activities in the specified domain of functioning, whereas others may believe themselves capable of handling a wide variety of tasks relevant to that domain. Finally, people may differ in the strength of their self-percepts of efficacy. They may be highly confident of their own competence or hold only weak assurance of their capabilities to perform various tasks within the specific domain of behavior being evaluated.

Microanalytic Research Strategy

Bandura (1977b) stressed the importance of using a microanalytic research strategy in investigating the origins and functions of perceived self-efficacy. In this methodology, measures of self-efficacy are tailored to particular domains of functioning as opposed to using an omnibus test of fixed items to measure global disposition. Individuals are presented with self-efficacy scales representing tasks relevant to the specific area of functioning and varying in difficulty or some other dimension appropriate to the activity domain being explored. They are asked to designate the tasks they believe they can perform and to indicate their degree of

certainty that they can execute them. Bandura stated that the most informative analysis requires detailed assessment of the level, generality, and strength of perceived self-efficacy, and consistent and precise measurement of the performance behaviors assessed by the scales. This strategy permits detailed assessment of cognitive events in close proximity to the behavior they supposedly regulate. In this manner, the microanalytic approach mitigates against the difficulty encountered in analyses of covariation between external factors and behavior, i.e., possible mediation by other mechanisms capable of producing similar effects. By hypothesizing an internal mediator--self-efficacy--a more direct link between factors affecting the mediator, and the mediator's links to overt behavior, can be investigated.

Causal Analysis of Self-Efficacy

According to Bandura (1986), "the most stringent test of a theory provides evidence of dual linkage in the causal process-- changes in relevant external factors are linked to an independently measured indicant of the internal mediator, and it, in turn, is linked to changes in behavior" (p. 423). Using the microanalytic research strategy, Bandura (1977b) and his colleagues (Bandura & Adams, 1977; Bandura, Adams, Hardy, & Howells, 1980; Bandura, Reese, & Adams, 1982) conducted research designed to test the causal contribution of perceived self-efficacy to behavior with various phobic dysfunctions. Using enactive mastery, modeling, and nonenactive modes of treatment, the authors presented evidence that

levels of self-efficacy could be raised and that increases in the levels of perceived self-efficacy both across groups and within the same individual gave rise to progressively higher performance accomplishments (Bandura, 1986). In addition, these studies and others revealed that self-efficacy beliefs are not simply reflections of past performance.

Several investigations in diverse domains and populations have been conducted in recent years, and the results have demonstrated that perceived self-efficacy predicts future behavior better than does past performance (Bandura & Adams, 1977; Bandura, Adams, Hardy, & Howells, 1980; Bandura, Reese, & Adams, 1982; Colletti, Supnick, & Payne, 1985; Kendrick, Craig, Lawson, & Davidson, 1982; McIntyre, Lichtenstein, & Mermelstein, 1983; Schunk, 1984; Williams, Dooseman, & Kleifeld, 1984). Several of these studies are examined in greater detail in the section presenting empirical evidence. That self-efficacy is often a better predictor than past performance supports the theoretical assertion that judgements of self-efficacy entail an inferential process in which the relative contributions of various personal and situational factors to performance are weighted in cognitions.

Status of the Theory

Nearly a decade after the publication of Bandura's (1977b) first paper on self-efficacy, Maddux and Stanley (1986) wrote that "self-efficacy has become one of the most frequent terms in the social, clinical, and counseling psychology literature" (p. 249).

In their overview of current theoretical concerns pertaining to self-efficacy, the authors found that two broad, related issues have received the most attention in the past decade and suggested that they will continue to command attention. The first issue concerns the influence of various cognitive factors on behavior, particularly that of three constructs: self-efficacy expectancy, outcome expectancy, and outcome value. The second issue concerns the relationship of self-efficacy theory to other major theories of cognitive mediation of behavior. Maddux and Stanley cited the application of self-efficacy theory to understanding and alleviating problems of human adjustment as a third major line of research inquiry with considerable merit. The theory is seen has having promise because it lends itself to greater specification and operationalization of variables than many extant theories and has much potential in the current search for mechanisms common to all successful behavior change procedures.

Empirical Evidence

Over the last 10 years, psychologists have applied self-efficacy theory to varied domains of psychosocial functioning, including anxiety disorders (Bandura, Adams, Hardy, & Howells, 1980; Bandura, Reese, & Adams, 1982), depression (Davies & Yates, 1982; Kanfer & Zeiss, 1983), motivation (Bandura & Cervone, 1983), achievement behavior (Bandura & Schunk, 1981; Collins, 1982) career development (Betz & Hackett, 1981; Hackett & Betz, 1981), and athletic attainments (Barling & Abel, 1983). Results from these

studies provide converging and convincing evidence that people's perceptions of their efficacy significantly affect their level of motivation and psychosocial functioning (Bandura, 1986; O'Leary, 1985).

In health-related research, a number of studies have also been stimulated by self-efficacy theory. In a recent article, O'Leary (1985) reviewed the findings of different lines of research applying self-efficacy theory to various facets of health behavior, including smoking-cessation relapse, pain experience and management, control of eating and weight, success of recovery from myocardial infarction, and adherence to preventive health programs. Based on the evidence, O'Leary (1985) concluded that the effects of therapeutic interventions in health behavior are partly mediated by changes in perceived self-efficacy and, consequently, that self-efficacy is an important cognitive factor affecting health.

Most directly related to the present research are two areas of the empirical evidence. Anxiety and depression are symptoms frequently encountered in the psychiatric population. Therefore, the research findings on the mediating role of self-efficacy in these affective disorders will be reviewed. Hospitalized psychiatric patients are also engaged in the process of recovery and are at risk for relapse. They are usually asked to adhere to some after-care treatment plan, including medication therapy and/or psychotherapy. Psychiatric patients' beliefs about their capabilities to cope with adjustment to life in the community and to

execute the self-regulatory skills required for successful adaptation may play a significant role in the success or failure of their coping efforts. Thus, evidence regarding the role of self-efficacy in processes of relapse in smoking cessation, recovery in postcoronary rehabilitation, and adherence to health regimens is also presented below.

Anxiety disorders. Self-efficacy theory conceptualizes anxiety and stress reactions in terms of perceived inefficacy to exercise control over potentially aversive situations (Bandura, 1986). As mentioned earlier, perceptions of self-efficacy have been shown to operate as a cognitive mediator in phobics' encounters with stressors (Bandura, 1977b, 1986; Bandura, Adams, Hardy, & Howells, 1980). In these studies, phobics' perceptions of their coping efficacy were raised to differential levels by various treatment modalities--enactive, vicarious, emotive, and cognitive. The level, strength, and generality of self-efficacy for a variety of threatening tasks was measured before and after treatment; pre- and posttreatment behavior was also measured at the level of individual tasks.

In a study using enactive and vicarious procedures to create differential levels of self-efficacy, Bandura (1977b) reported that, consistent with the theory of sources of self-efficacy, experiences based on performance accomplishments produced higher, more generalized, and stronger expectations than did vicarious experience, which in turn exceeded those in the control condition. Regardless of treatment modality, however, the higher the level of

perceived self-efficacy at the completion of treatment, the higher was the level of approach behavior; for enactive treatment, r = .83, and for vicarious treatment, r = .84.

According to Bandura, the most precise index is provided by microanalysis of congruence between self-efficacy and individual task performance, rather than correlation coefficients based on aggregate measures. In this analysis, Bandura (1977b) reported congruence of 89% (enactive mode) and 86% (modeling mode) between self-efficacy judgements and actual performance. The results of this study were replicated in a series of studies using additional treatment modalities: cognitive and emotive (Bandura & Adams, 1977; Bandura, Adams, Hardy, & Howells, 1980). Congruence between strength of self-efficacy at the completion of treatment and performance attainments was 81% for the cognitive modality (r = .74) (Bandura, Adams, Hardy, & Howells, 1980) and 86% for the emotive mode (r = .72) (Bandura & Adams, 1977). Taken together, these results lend support to the generality of self-efficacy across the four hypothesized modes of influence.

Bandura and colleagues (Bandura, Adams, Hardy, & Howells, 1980) have also provided evidence for the generality of self-efficacy theory across different domains of functioning. In a study of agoraphobics, perceived efficacy and phobic behavior was systematically assessed in those areas of functioning that posed moderate to severe threats to the subjects. Eight efficacy scales were devised, including such things as traveling by automobile,

using elevators and escalators, climbing stairs to high levels, dining in restaurants, browsing and shopping in supermarkets, and venturing forth alone from the treatment center. Enactive mastery experiences were used as the principal method of increasing self-efficacy. Both level and strength of self-efficacy were boosted significantly by the treatment. In addition, the level (r = .78) and strength (r = .70) of self-efficacy were significantly related to posttreatment level of coping behavior, as measured by performance attainments.

Depression. As mentioned above, self-efficacy theory conceptualizes perceptions of inadequate control over aversive outcomes as central to anxiety. Depression, on the other hand, is viewed as perceived inefficacy to control highly valued outcomes (Bandura, 1986). Research focusing on interventions to alter controlling inefficacy in depressive disorders is not yet available, but some aspects of the relationship between depressive affect and perceptions of self-efficacy have been explored. Davies and Yates (1982) compared the depression etiologies specified by self-efficacy theory and an alternative cognitively based theory, revised learned helplessness theory (Abramson, Seligman, & Teasdale, 1978). In an experimental manipulation using anagram solutions, the authors reported that their findings supported the self-efficacy formulation of depression and failed to support the alternative cognitive theory for males, although not for females. Males exhibited performance deficits and depressed affect where self-efficacy expectations were low and outcome value expectancies were high. Expectancy rating

also showed that self-efficacy expectancies correlated more strongly with performance than did desired outcome expectancies, again supporting Bandura's thesis that cognitive self-appraisal of controlling efficacy is a major mechanism mediating depression.

Bandura (1986) postulated that individuals who are likely to become depressed tend to impose stringent standards on their attainments and to belittle their successes. Therefore, one would expect to find that failure will be motivating for people who have a high sense of efficacy for goal attainment and will be depressing for those who invest their self-regard in personal accomplishments they judge themselves inefficacious to fulfill. Support for this conceptualization was reported by Kanfer and Zeiss (1983). In a comparative study of depressed and nondepressed students, these authors reported results that revealed that depressed subjects judged themselves as less self-efficacious in the area of interpersonal functioning than did nondepressed subjects. In addition, it was found that the goals nondepressed people pursued fell within reach of their perceived self-efficacy, whereas the depressed set their personal standards of accomplishment well above their perceived efficacy.

Kavanagh and Bower (1985) found that mood and perceptions of self-efficacy influence each other bidirectionally. These authors found that inducing a happy or sad mood greatly influenced subjects' perceived efficacy: Positive mood enhanced efficacy, whereas negative mood diminished it. These findings held not only for

specific activities but equally strongly for a range of interpersonal skills and competencies. Bandura (1986) suggested that if despondency can lower self-efficacy beliefs, poor performance may follow, thereby creating even deeper despondency. On the other hand, raising percepts of efficacy would be expected to facilitate accomplishments, generating an affirmative reciprocal process.

The empirical evidence presented above lends support to Bandura's (1986) concept that controlling self-efficacy, i.e., self-efficacy to exercise control over environmental situations and demands, mediates affective reactions such as anxiety and depression. Bandura's (1986) concept of self-regulatory efficacy, on the other hand, appears to play a role in the success or failure of behavioral efforts involved in processes of relapse, recovery, and adherence to health regimens. It seems reasonable to speculate that both of these variants of coping efficacy might be important in the efforts of psychiatric patients as they cope with the tasks of adjusting to life in the community after they are discharged from the hospital. The research related to self-regulatory efficacy in smoking cessation and relapse, postcoronary recovery, and adherence to health regimens is presented next.

Smoking cessation. The self-efficacy research on smoking-cessation relapse was stimulated, in part, by the work of Marlatt and Gordon (1980). These authors postulated a common relapse process in smoking, alcoholism, and drug addiction based on cognitive factors. They examined situations in which these patients

experienced relapse, and found that 76% of the slips occurred in three categories: interpersonal negative emotional state (frustration/anger, anxiety, depression, loneliness), social pressure to resume the behavior, and interpersonal conflict (Marlatt & Gordon, 1980; O'Leary, 1985). Marlatt and Gordon hypothesized that regardless of the situation of relapse, a negative self-referent cognitive process often occurs that makes ex-addicts especially vulnerable to relapse. They called this process the "abstinence violation effect" and described two of its cognitive components. First, the person who has slipped experiences conflict and feels guilty. Second, the person tends to make an attribution for the slip as a failure to exercise personal control. According to this model, if the individual then experiences intensified negative feelings and decreased self-percepts of efficacy to remain abstinent, a full relapse ensues (O'Leary, 1985).

Linking the Marlatt and Gordon relapse model with self-efficacy theory, one could speculate that the absence of effective coping strategies tends to reduce perceived self-efficacy and lead to a failure of relapse-resistant behavior. Moreover, relapse might be avoided if self-efficacy is high enough to mobilize sufficient effort to resist the addictive behavior in the first place or if self-efficacy to recover from a slip is high enough to reinstate self-control after a slip occurs (O'Leary, 1985).

The relationship between self-efficacy to maintain abstinence and smoking cessation has been explored in a number of studies.

DiClemente (1981) measured perceived self-efficacy of 63 subjects a short time after they had stopped smoking. Subjects either had quit smoking on their own or had completed group treatment using either aversive or behavioral management procedures. The measure of self-efficacy consisted of 12 separate situations or events that were identified in a pilot study as strong cues to smoke. The questionnaire included such items as "when I am nervous," "over coffee while talking and relaxing," "at work when I am experiencing some pressure in my job," and "when I see that I am gaining weight." Subjects were asked to rate their degree of certainty that they could avoid smoking in each of the 12 situations on a 7-point Likert scale ranging from completely sure (7) to completely unsure (1). Ratings of each subject were summed to yield a single self-efficacy score reflecting perceived ability to avoid smoking and to continue abstinence. Additional information on subject demographics and smoking history was also obtained. Finally, a follow-up on maintenance behaviors was conducted in order to test the hypothesis that successful maintainers 5 months after initial success should show higher self-efficacy scores than recidivists. (Recidivists were those who failed to remain 99% free of their habit over the 5-month period.)

DiClemente reported no significant initial group differences in the measure of self-efficacy. Subjects were generally "very sure" that they could avoid smoking in the future (mean score for each item = 6; mean total score = 71.5; range of scores from 43 to 84).

As the author pointed out, successful abstention at the initial time of assessment may account for the overall high confidence level.

Despite this restricted initial range, DiClemente found that the perceived efficacy of subjects who had maintained abstinence at the 5-month follow-up was significantly greater than that of relapsers. Self-efficacy measured at the time of initial success and follow-up were the only variables that discriminated between the successful maintainers and the recidivists. In addition, significant correlations were found between efficacy expectations and length of successful abstinence (r = .42) and reported difficulty in maintaining abstinence (r = -.45).

DiClemente also reported evidence for the internal consistency and initial validity of the self-efficacy measure. Pearson first-order correlations of individual scale items with the total scores yielded an average item correlation of .68, with a range of .58 to .76. As expected, no significant correlations were found between self-efficacy scores and demographic variables, although two significant but low correlations were found between self-efficacy and smoking-history variables: age began smoking (r = -.25) and cigarettes smoked per day before quitting (r = .28). The predictive superiority of efficacy expectations over past performance in this study supported the hypothesis that perceptions of self-efficacy supersede estimates of past behavior.

In another study, Condiotte and Lichtenstein (1981) also investigated the relationship between efficacy expectations and successful abstinence among 78 smokers recruited from two different

treatment programs. These investigators obtained pretreatment, posttreatment, and 3-month follow-up self-efficacy measures and examined their relationship to two outcomes measures: relapse and latency to relapse. In addition, the authors conducted a microanalysis to assess the degree of correspondence between individual subjects' posttreatment efficacy scores and situations in which relapse occurred.

The self-efficacy questionnaire for this study was a 48-item measure developed from a comprehensive list of smoking situations compiled by Best and Hakstian (1978). Subjects were asked to designate on a 100-point probability scale, ranging in 10-interval units, the probability that they would be able to resist the urge to smoke in several different situations, such as "when you feel impatient," "when you are worried," "when you want to avoid eating sweets," "when you feel bored," and "when you are drinking coffee or tea."

Using a cluster analytic procedure, the authors reported results indicating seven moderately intercorrelated clusters in their self-efficacy questionnaire: restlessness, intrapersonal negative mood states, crutch, time structuring, social interpersonal negative mood states, and self-image. Alpha reliabilities for the seven clusters ranged from .69 to .94.

The major finding of this study, as in the previous research, was a strong relationship between treatment-enhanced self-efficacy expectations and the follow-up maintenance of smoking abstinence.

Condiotte and Lichtenstein reported that the posttreatment self-efficacy judgements of their subjects predicted both the probability of maintained abstinence ($\underline{r}$ = .57) and the amount of time to relapse ($\underline{r}$ = .69).

The most striking finding, according to Condiotte and Lichtenstein, was the degree of congruence between efficacy and behavior demonstrated by the microanalysis. They assessed the relationship between subjects' self-efficacy data for seven situation cluster scores and the actual situation of relapse. The analysis revealed an extremely high degree of correspondence between the cluster of smoking situations in which subjects experienced a low degree of self-efficacy and the cluster of situations in which they actually relapsed.

Condiotte and Lichtenstein concluded that the results of their study lent substantial support to the utility and validity of Bandura's (1977b) theory. Acknowledging the inability to attribute causality to observed relationships on the basis of correlational data, these authors nevertheless viewed their results as important in demonstrating the predictive validity of measures derived from Bandura's theory.

In an effort to replicate and extend the findings of Condiotte and Lichtenstein (1981), McIntyre, Lichtenstein, and Mermelstein (1983) administered essentially the same self-efficacy measure as in the previous study to 74 similar subjects. Smoking-status data in this study were collected at 1-month, 3-month, 6-month, and 1-year follow-ups. The results replicated the finding of the earlier study

that end-of-treatment self-efficacy is a significant predictor of maintenance of smoking cessation up to 3-month follow-up ($\underline{r}$ = -.50). In addition, self-efficacy scores were significantly associated with 6-month follow-up smoking status ($\underline{r}$ = -.36), although not at 1-year follow-up.

Two additional points are worth noting about the previous two studies. First, the results were obtained using self-efficacy scores measured after subjects participated in treatment programs that differed in content (e.g., educational model, behavioral self-control techniques, aversive procedures), form (e.g., individual and group administration), and duration (5 to 7 days daily and 5 to 7 weekly sessions). As Condiotte and Lichtenstein (1981) pointed out, this should provide for greater generalizability of the findings. Also of interest are the findings that self-efficacy increased significantly regardless of the type of intervention program: Mean self-efficacy scores increased from 48.5% pretreatment to 91.1% posttreatment (Condiotte & Lichtenstein, 1981) and from 50% pre-treatment to 78% posttreatment (McIntyre et al., 1983). (Percentages represent confidence to resist the urge to smoke on a scale from 0% to 100%.)

Some of the conceptual and methodological difficulties in applying self-efficacy measurement to new clinical domains were discussed by Colletti, Supnick, and Payne (1985). The focus of their study was the development and validation of a self-efficacy scale for resisting the urge to smoke. The first issue concerns the

magnitude, or level, dimension of self-efficacy measurement. Colletti et al. pointed out that Bandura's (1977b) original concept of magnitude refers to an individual's confidence to perform tasks arranged in hierarchical fashion according to task difficulty. Since smoking situations are not easily arranged into a hierarchy of related steps of increasing difficulty, these investigators did not employ the concept of magnitude of self-efficacy in developing their scale. One would anticipate a similar difficulty in determining the difficulty of tasks related to post-hospital adjustment behaviors for psychiatric patients. The exclusion of the magnitude dimension received some empirical support from the research of Godding and Glasgow (1985), who reported high correlations between level and strength scores in two studies ($\underline{r}$s of .67 to .93). A related issue raised by Colletti et al. is the difficulty of assessing generality of self-efficacy when moving from a fairly circumscribed behavior, such as phobic responses, to a pansituational behavior like cigarette smoking. Particular attention must be paid to selecting the various smoking situations to be included in the scale. Again, this issue is relevant to the development of a self-efficacy measure for psychiatric post-hospital adjustment behaviors, which one would expect to be diverse in nature.

A third important conceptual issue that pertains to smoking-cessation self-efficacy measurement is also relevant to the present topic. Colletti et al. described this concern as the choice of target behavior. Should one attempt to measure confidence in capability to avoid smoking in specific situations, or should one's

confidence in executing a specific coping response be the primary focus? To answer this question for their own research purposes, Colletti et al. (1985) relied in part on the smoking literature. They concluded that there was insufficient evidence to suggest that measuring the ability to perform coping responses rather than ability to resist an urge would serve as a better predictor of outcome. Confidence in ability to resist the urge to smoke in specific situations was chosen as the target behavior.

Scale development in the Colletti et al. research resulted in a 17-item Smoking Self-Efficacy Questionnaire (SSEQ). The final SSEQ was derived from a three-track procedure to identify appropriate scale items. They collected information from 29 recent relapsers on the antecedent and consequent situational events surrounding smoking, and on the intrapersonal and interpersonal situations and emotional states in which subjects found the most difficulty resisting the urge to smoke. After a content-validity review, the authors then correlated the items with a criterion (percentage of baseline smoking at 6-month follow-up) for the original 29 subjects plus an additional 24 subjects. Only those items that correlated significantly with the criterion were retained (17 of the original 26). In the actual research application, 128 subjects recruited from ongoing, behaviorally oriented smoking-reduction programs were asked to indicate their confidence to resist smoking in such situations as "after a meal," "poor performance on an exam," and "talking/socializing," on a scale ranging from 10 to 100.

Self-efficacy assessments were conducted pretreatment, posttreatment, and postmaintenance. Self-reported smoking rates were collected during treatment, at monthly intervals up to 6-month follow-up, and at 1-year follow-up. In addition, in an attempt to provide data on the validity of the SSEQ against a physiological measure, carbon monoxide readings were taken on 86 of the 128 subjects.

The authors reported that the SSEQ appeared to be an internally consistent and marginally stable instrument. Coefficient alphas for pretreatment, posttreatment, and postmaintenance were .90, .91, and .93, respectively. The marginal temporal stability (r = .41 between pre- and posttreatment; r = .62 between posttreatment and postmaintenance) was expected, given that subjects were involved in a treatment intervention designed to generate cognitive and behavioral changes. The results of correlational tests of the SSEQ's relationship to concurrent smoking and carbon monoxide reading supported the concurrent validity of the instrument.

In terms of predictive validity, significant correlations were found between SSEQ scores and self-reported smoking data at 3-month (r = -.39) and 6-month (r = -.34) follow-up. These results lend support to the expectation that individuals with high self-efficacy should persist longer in difficult situations than those with low self-efficacy.

Colletti et al. also reported evidence in support of the incremental utility and discriminant validity of the self-efficacy construct. Significant differences were found in an analysis of

self-efficacy ratings among groups of subjects abstinent at postmaintenance: those who relapsed within the first month, between 1 and 3 months, and between 3 months and 1 year ($F[2,53]$ = 6.61). Further analyses indicated that individuals who relapsed before 1 month follow-up had lower SSEQ scores than those who relapsed after 3 months. In contrast, relevant smoking variables for the entire sample, such as pretreatment rate and number of years smoking, did not serve as predictors of time to relapse. The authors also found that the SSEQ provided a better prediction of future smoking than did a simple global expectancy measure.

In an attempt to apply the microanalytic strategy advocated by Bandura (1977b), Colletti et al. conducted analyses of the relationship between change in self-efficacy and smoking behavior between posttreatment and 1-month follow-up on an individual-subject basis. Congruence was measured either by enhanced self-efficacy and reduction in smoking, or reduced self-efficacy and increase in smoking. Seventy-nine percent of subjects who showed a meaningful change in self-efficacy demonstrated congruent changes in smoking behavior. A second analysis to predict future smoking rate on the basis of individual SSEQ scores was conducted using subjects whose mean rated confidence was classified as either high (above 66%) or low (below 33%). Eighty-two percent of the subjects used in this analysis displayed congruence, defined as having a high SSEQ rating and a low smoking rate, or a low SSEQ rating and a high smoking rate.

Finally, to ensure that the SSEQ was measuring self-efficacy expectations and not variance accounted for by other factors, correlations between SSEQ scores at postmaintenance and the following variables were conducted: age, pretreatment smoking rate, number of years smoking, and the initial smoking goal. None of these correlations was significant.
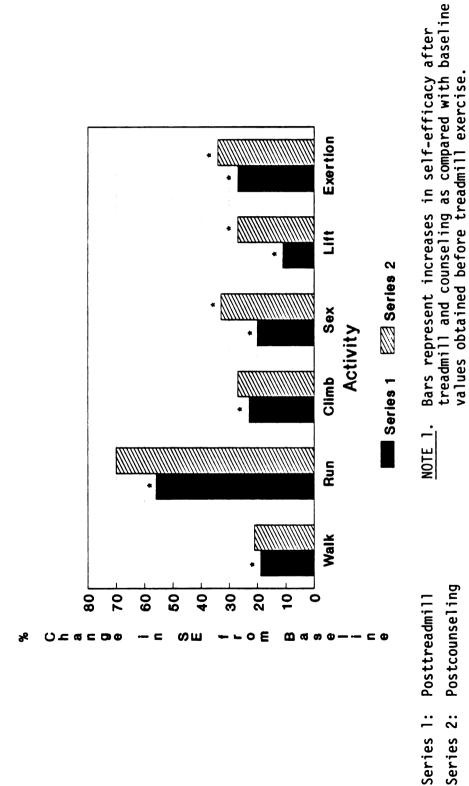
Finally, several other investigators have recently examined smoking self-efficacy in comparison with other, possibly influential variables, such as outcome expectancies concerning smoking (Godding & Glasgow, 1985), amount of physical dependence (McIntyre et al., 1983), coping history, and motivation to stop smoking (Barrios & Niehaus, 1985; DiClemente, 1986). The results of these studies indicate that self-efficacy to abstain is generally a better predictor of relapse than these alternative variables.

Postcoronary recovery. In her review of self-efficacy and health behaviors, O'Leary (1985) pointed out that each year about 400,000 people experience uncomplicated myocardial infarctions. Although physically capable of resuming productive and active lives, many of these patients suffer depression, feelings of helplessness, and great fear of problem recurrence. Recent research has provided evidence that perceived physical and cardiac efficacy is an influential mediator of postinfarction activity and that such self-efficacy can be enhanced (O'Leary, 1985). According to Bandura (1986), this research has demonstrated how each of the four sources

of self-efficacy can be used to enhance patients' perceptions of their cardiac-recovery capability.

The first study in this line of inquiry showed that having patients master increasing workloads in treadmill exercise and receive persuasive medical counseling increased the patients' sense of physical efficacy. Ewart, Taylor, Reese, and DeBusk (1983) assessed patients' self-efficacy before treadmill testing, after testing but before medical counseling, and after counseling. A set of six self-efficacy scales was used to measure patients' perceptions about their capabilities to carry out the following activities: walking, running, climbing stairs, engaging in sexual intercourse, lifting objects, and overall ability to tolerate physical exertion.

Self-efficacy judgements predicted how well patients performed on the test (r = .36) and were, in turn, predicted by test performance (r = .50). After exercise testing, scores for all six activity areas increased significantly (see Figure 2.1), although proportionately less for tasks more dissimilar to treadmill exercise, i.e., walking, lifting, and sexual intercourse. After counseling sessions, self-efficacy scores for sexual activity, lifting, and general exertion increased significantly above the treadmill baseline, demonstrating an additive effect. In addition, Ewart et al. (1983) found that posttreatment self-efficacy judgements were more accurate predictors of subsequent home activity (measured by exercise duration, r = .53, and mean maximum heart rate, r = .34) than was the treadmill performance itself. The

Series 1: Posttreadmill
Series 2: Postcounseling

NOTE 1. Bars represent increases in self-efficacy after treadmill and counseling as compared with baseline values obtained before treadmill exercise.

NOTE 2. Hatched portion above black bar represents additive effect of counseling on self-efficacy.

*p < .05.

Figure 2.1.--Postcoronary self-efficacy. From Ewart, Taylor, Reese, and DeBusk (1983).

authors concluded that "self-efficacy for a particular activity was thus shaped by an individual's past success in performing that activity or ones similar to it, and by the amount of encouragement given by a respected and credible authority figure" (pp. 1079-1080). Bandura (1986) cited the evidence that self-efficacy was superior to treadmill performance itself as support for his thesis that mastery experiences exert their influence indirectly, facilitating recovery by raising patients' beliefs about their physical and cardiac capabilities. Also, the demonstrated relationship between higher self-efficacy and greater activity levels at home suggests that enhanced self-efficacy may foster more active, persistent pursuit of activities as predicted by the theory.

In a further study, Ewart and his colleagues examined self-efficacy perceptions as predictors of behavioral compliance to exercise programs in the postcoronary population (Ewart et al., 1986). Forty men completed a jogging self-efficacy measure before beginning a group exercise program. Each subject also performed a baseline treadmill exercise test and completed questionnaires on Type A personality orientation, depression, and marital adjustment. Before beginning a supervised exercise program, each participant was prescribed a target exercise heart rate range of 70% to 85% of maximal heart rate achieved on the treadmill test. Monitoring during programmed group jogging disclosed significant noncompliance with exercise prescriptions: 33% of the subjects showed overexertion and 25% showed underexertion.

Results of Ewart et al.'s (1986) investigation revealed that pretest jogging self-efficacy predicted the number of minutes patients exercised above or below the prescribed levels, but depression, Type A, and treadmill performance measures did not. When treadmill performance was partialled out to measure the independent association of each variable with noncompliance, the significant relationship of jogging self-efficacy remained essentially unchanged (r = .38). Thus, the authors concluded that exercise noncompliance was related more to the patients' self-perceived capabilities than to their actual capabilities.

In a third recent study, Taylor, Bandura, Ewart, Miller, and DeBusk (1985) addressed the issue of raising spousal perceptions of postcoronary patients' capabilities, and their effect on rehabilitation efforts. These investigators hypothesized that spousal judgments of the patients' physical and cardiac capabilities may enhance or retard the recovery process. This study also used treadmill exercise as the self-efficacy-enhancing intervention, but this time the spouse was involved in the treadmill testing on one of three levels: observing, not observing, or observing and participating in the test themselves. Thirty couples were involved in the experiment, 10 couples at each level of involvement (all of the patients were male). After the treadmill activities, couples were fully informed of the patient's capacity to perform various physical activities by a cardiologist.

Self-efficacy of both patients and wives was measured by 12 scales, each of which described levels of capability to tolerate

various physical and emotional stressors; another scale asked for ratings of overall cardiac capablity in terms of capacity to tolerate increases in heart rate. For each activity, subjects rated the strength of self-efficacy on a 100-point scale divided into 10-unit intervals. Both husband and wife completed the same scales three times: before treadmill exercise, immediately after testing, and after the counseling session.

Taylor et al. reported that wives' ratings of their husbands' physical and cardiac efficacy before treadmill testing were substantially lower than those of their husbands. In the two groups of wives who did not participate in the treadmill activity, no significant increase in the perception of their husbands' capabilities occurred. For the participant group, however, a sharp rise in wives' perceptions of their husbands' capabilities was registered. Wives in the participant group also demonstrated a greater increase in efficacy after counseling than those in the other two groups. Moreover, after counseling, couples in the participant-spouse group showed significantly higher overall efficacy congruence than couples in the nonparticipant groups.

As in the earlier study by Ewart et al. (1983), the present study found evidence to support the view that perceptions of capabilities can affect the course of recovery. The higher husbands' and wives' efficacy expectations after counseling, the greater was the patients' cardiovascular functioning as measured by peak heart rate and maximal workload achieved on the treadmill at

11- and 26-week follow-up (rs from .35 to .67) (Taylor et al., 1985). Peak treadmill heart rate and workload during test performance were also predictive of follow-up cardiovascular functioning. However, when initial treadmill performance was partialled out, perceived cardiac efficacy still predicted level of cardiovascular functioning. The latter was not predicted by initial treadmill performance when self-efficacy was partialled out (Bandura, 1986).

Adherence to health regimens. Adherence to prescribed after-care treatment among discharged psychiatric patients has been shown to be poor, and noncompliance has been cited as one factor that may contribute to the occurrence of relapse in this population (Anthony et al., 1978). Ewart et al.'s (1986) findings, presented above, support the role of self-efficacy beliefs in adherence to prescribed remedial activities in postcoronary patients. In another study, Kaplan, Atkins, and Reinsch (1984) examined self-efficacy expectations as a mediator of changes in exercise behavior among 60 older adult patients with chronic obstructive pulmonary disease. Patients were trained in walking programs by cognitive, behavioral, or cognitive-behavioral treatment interventions. A fourth group constituted a control group in which patients received attention but did not have training specifically directed toward increasing compliance. In addition to a specific self-efficacy for walking scale, patients were administered a general health locus of control measure after each patient had been given his or her walking

prescription. Behavioral and physiological measures were obtained before treatment and at 3-month follow-up.

Kaplan et al. reported that all treatment groups differed significantly from the control group in terms of changes in walking efficacy. Changes in the health locus of control were nonsignificant. In correlational analyses between changes in self-efficacy and walking compliance at 3-month follow-up, the authors found significant correlations for self-efficacy (r = .32) but not for health locus of control (r = -.01). These results are consistent with Bandura's (1986) proposition that specific rather than generalized expectancies mediate behavior change.

Psychiatric Recidivism and Recovery

A major body of literature of relevance to the present research is concerned with the identification and specification of variables associated with the relapse and recovery process in the psychiatric population. This research evidence provides a context for developing a post-hospital adjustment self-efficacy scale.

Literature Reviews of Past Recidivism Studies

In one of the first major reviews of the literature on psychiatric recidivism, Rosenblatt and Mayer (1974) concluded that the number of previous hospital admissions was the sole reliable predictor of rehospitalization. Based on their review, the authors suggested that searching for diagnostic and psychopathological determinants of recidivism results in too narrow a focus and that

the investigation of social processes underlying readmission rates may prove more valuable to understanding the readmission phenomenon.

In a review published a year later, Buell and Anthony (1975) examined the relationship between demographic characteristics of ex-psychiatric patients and rates of recidivism and post-hospital employment. Again, the authors concluded that the best predictor of future behavior was past behavior: The best demographic predictor of rehospitalization was the number of previous hospitalizations. Characteristics such as diagnosis, educational level, occupational level, race, and employment history did not appear to be related to recidivism.

A third major review of recidivism studies was conducted by Anthony, Cohen, and Vitalo (1978). In general, previous history of hospitalization was again reported as the best predictor of future recidivism. Patients' psychiatric diagnosis was not related to recidivism. Another category of correlates--patient ratings--was also reported to yield some interesting relationships. First, professionals' ratings of patients' behavior were related to post-hospital employment but not to recidivism. Second, ratings made by significant others shortly after discharge were related to recidivism but not to employment. Third, patients' self-ratings of their behavior were found to predict recidivism.

Of particular note is a study by Miller and Willer (1976). A random sample of 108 discharged psychiatric patients participated in this study (64 psychotic, 36 neurotic or character disorder, and 8 unspecified diagnoses). Subjects were asked to complete a

self-assessment measure 3 months after discharge. At 6-month follow-up, higher self-ratings on such factors as "ability to handle money, source of financial support, work behavior, job-seeking . . . and ability to deal effectively with anger" (p. 900) differentiated nonrecidivists from recidivists. Miller and Willer emphasized that while the number of previous admissions was significantly related to recidivism at 6 months, this variable accounted for only 2% of the variance. However, when the above social measures were included along with measures of time in hospital during the last year and the number of previous hospitalizations, 36.3% of the variance in recidivism was accounted for by the variables. The authors concluded that social factors are important determinants of recidivism. Based on this and other studies, Anthony et al. (1978) concluded that social and work-related skills are better predictors of outcome than diagnostic labels or symptoms.

Avison and Speechley (1987) presented the most recent review of research on social, social-psychological, and psychiatric correlates of outcome among discharged psychiatric patients. Table 2.1 presents a summary of the correlates associated with various outcome criteria in the studies reviewed. In summarizing their results, Avison and Speechley noted that although there is evidence to support Anthony et al.'s (1978) view that social, interpersonal, and work skill are good predictors of outcome, psychiatric variables also predict these outcomes. According to Avison and Speechley:

> The nature of most studies included in this review makes it
> impossible to compare the predictive power of these variables.

Table 2.1.-- Correlates of outcome among discharged psychiatric patients.

Outcome Criteria	No. of Studies	Social Correlates				Social-Psychological Correlates				Psychiatric Correlates			
		Correlate	+	−	0	Correlate	+	−	0	Correlate	+	−	0
Readmission	16	Sex	2[a]	5	2	Social interaction	1	5	1	Previous hospitalizations	7		1
		Race			2	Interpersonal conflicts	4		1	Level of chronicity	4		
		Age	1		4	Experience of social support				Level of symptoms	3		
		Education			6								
		Married	3		3								
		Social class	1		4								
		Employment	3		4								
		Zigler-Phillips Social Competence Scale			1								
Community Tenure	5	Sex			1					Psychopathology	2		
		Age			2					Length of previous hospitalizations	3		1
		Marital status			2								
		Education			1								
		Social class	1										
		Employment	3										
Core Role Performance	8	Age			3	Previous social contacts	1			b			
		Married	2										
		Previous employment history	5										
Social Adjustment	7	Age			2	Social interaction	2			Symptoms	2		
		Married	1										
		Maintaining hygiene and managing money (basic life skills)	1										
		Premorbid work history			1								
Current Level of Symptoms	12	Males	2			Level of social contacts	2			Duration of previous hospitalization	2		
		Married	3			High expressed emotion in family	4			Symptoms at baseline			1
		Premorbid work history	1										
Global Rating of Outcome	8	Age	2			Social interaction	1			Schizophrenia	2		1
		Married	2							Affective psychosis			
		Work history	2		1					Personality disorder			
										Length of hospitalization			4
										Confusion	1		
										Frequency of symptoms on first admission			1

Source: Avison and Speechley (1987).

[a] Unspecified nature of relationship.

b Earlier studies suggested negative relationship between level of symptoms and employment, but recent research has not focused on this area.

. . . In general, these studies fail to advance our understanding of the process of adjustment. Rather, they simply identify broad categories of patients who are at risk of subsequent rehospitalization. In many respects, these studies, conducted over the last 10 years, largely confirm the relationships uncovered more than two decades ago. (pp. 15-16)

The authors identified several theoretical and methodological shortcomings of past studies, e.g., a lack of theoretical direction, small and heterogeneous samples, imprecise measure of predictor and outcome variables, and few attempts to examine statistical interactions. They recommended the application of new theoretical and methodological approaches to the study of psychiatric outcome.

Premorbid Functioning and Outcome

The relationship between predictor and outcome variables has been a major focus of schizophrenia research ever since schizophrenia was identified as a specific syndrome (Kokes, Strauss, & Klorman, 1977). In the earliest studies, investigators searched for variables that would separate patients with poor prognosis from those with good prognosis. Several premorbid characteristics of persons were identified as commonly related to multiply defined outcome: age, quantity and quality of work, social class, past and present heterosexual relationships, family history of psychiatric illness, age of onset, and past and present social-personal adjustment. As the relationship between premorbid social adjustment factors and outcome in schizophrenia became evident, researchers began to develop multivariate instruments to concentrate the specific predictive capacity associated with each variable into a

global premorbid-functioning score with prognostic significance (Kokes et al., 1977).

Included in Kokes et al.'s review are 12 of the major instruments developed for the measurement of premorbid adjustment since 1941. The authors highlighted two of the instruments: the Strauss-Carpenter Prognostic Scale (1974, 1977) because it was designed using multidimensional premorbid and outcome measures and the Zigler-Phillips Social Competence Scale (1961) because it is the only one of the major premorbid scales derived from theoretical suppositions as well as empirical findings.

Strauss and Carpenter (1974) constructed a four-item rating scale to measure outcome in the following areas: (a) frequency of social contacts, (b) percentage of time employed, (c) severity of symptomatology, and (d) amount of time spent out of the hospital during the follow-up period (2 and 5 years) (Kokes et al., 1977). The Prognostic Scale includes the following variables shown to have predictive significance in other studies: level of useful work, social class, social relationships, heterosexual relationships, quality of treatment facilities used, family history of psychiatric hospitalization, earliest age of onset of psychiatric symptoms, action problems (violence and suicidal or homicidal gestures), flat affect, duration of previous hospitalization, length of time since first occurrence of psychotic symptoms, presence of thought disorder, delusions or hallucinations, presence of depression, hypomania or mania, and presence of precipitating events. Each item

is rated on a scale from 0 (poor prognosis) to 4 (favorable prognosis) for the year before evaluation (Kokes et al., 1977).

In a 2-year follow-up study of their original sample of 105 schizophrenics, Strauss and Carpenter (1974) found that duration of previous hospitalization was the most powerful predictor of each of the four outcome criteria: duration of follow-up hospitalization (r = .32), poor social relations (r = .40), unemployment (r = .42), symptoms (r = .43), and total poor functioning (r = .51). Consistent with earlier research results showing that past performance is the best predictor of future performance, Strauss and Carpenter (1977) found significant relationships between each of three predictor variables and the corresponding items at follow-up: duration of hospitalization (r = .32), poor social relations (r = .44), and unemployment (r = .36). Not surprisingly, the most efficient predictive formula was the sum of the three most powerful predictors. Based on these results, Kokes et al. (1977) concluded that it is valuable to conceptualize outcome as a composite of several semi-independent functions, e.g., social functioning, employment, and duration of hospitalization.

The other major prognostic scale, the Social Competence Index (SCI), was constructed by Zigler and Phillips (1961) based on their developmental theory. Basically, social competence was viewed as a global index of psychological maturity level. As an index, the authors defined social competence by six variables: age, intelligence, education, occupation, employment history, and marital status. Each of these six variables is divided into three

categories ranging from low to high competence. Each category is assigned a score of 0, 1, or 2, and the overall social competence score is the mean of all items that can be rated from case history data (Kokes et al., 1977).

Based on their review of validity studies of the Zigler-Phillips SCI, Kokes et al. (1977) reported that studies have provided support for the hypothesis that the social competence dimension is related to various outcome measures, including rehospitalization, for both schizophrenic and nonschizophrenic psychiatric patients. Subsequent studies have confirmed the utility of the social competence measure in predicting major aspects of outcome functioning (e.g., Glick & Zigler, 1986; Westermeyer & Harrow, 1986).

In concluding their review of premorbid adjustment instruments, Kokes et al. advocated that further attention be paid to several critical needs. First, emphasizing that successful outcome demands adaptive functioning in the post-hospital environment in several specific areas--social relationships, work, personal care, and levels of symptomatology--they called for reliable collection of data in each specific area. Second, they cited the need for more applications of theoretical conceptualizations, such as learning theory and systems theory, in order to allow further refinement of variables and discovery of other relationships.

Further support for the need to investigate specific areas of functioning rather than relying on global assessments is found in a more recent review of the literature on premorbid functioning. In a

meta-analysis of data from 32 studies, Stoffelmayr, Dillavou, and Hunter (1983) investigated the key question of the relationship between premorbid social functioning and outcome. These authors cited as their single most important finding the correlation of .62 between premorbid functioning, as assessed by means of the prognostic scales, and global outcome. Stoffelmayr et al. concluded that their data analysis supported the theoretical hypothesis of a strong central social competence factor that underlies global performance. However, on a pragmatic level, these authors made the following recommendation:

> When attempting to predict a particular individual's future social functioning or work functioning, those predictions are best made from a knowledge of that particular individual's performance in this area rather than from global indexes of social functioning. (p. 348)

This recommendation to focus on more specific performance behaviors is similar in spirit to Strauss et al.'s (1977) call for a focus on more basic cognitive processes (cited in Chapter I). These authors pointed out the need for investigations that are directed toward both identifying specific behavioral tasks and exploring individuals' thought mechanisms as they appraise their capabilities to execute these behaviors.

Factors Affecting the Relapse Process

In the spirit of searching for less global and more specific factors influencing the course of recovery or relapse in psychiatric disorders, several investigators have examined specific variables

that may be linked to this process. A review of the literature in this area is presented below.

Medication and after-care adherence. A number of studies have provided evidence that psychotropic medication is prophylactic for psychiatric patients in helping to prevent relapse. For example, Hogarty and associates (1974) found that 48% of patients on medication relapsed over a 2-year period compared with 80% of patients on placebo. Other researchers, however, have found no significant differences between recidivists and nonrecidivists based on medication variables (Franklin, Kittredge, & Thrasher, 1975).

Conflicting findings, concern about the potentially debilitating effects of maintenance medication, and noncompliance statistics ranging from 32% to 49% (Anthony et al., 1978) combine to create considerable controversy around this issue. In response, Davis, Gosenfeld, and Tsai (1976) conducted a detailed analysis of 23 controlled studies investigating the number of patients who relapsed or did not relapse on antipsychotic drugs and placebo. The results showed that of 1,884 patients on drugs, 20% relapsed, in comparison to 52% of 1,346 patients on placebo. The authors interpreted the results as "overwhelming evidence to conclude that maintenance antipsychotic drugs do in fact prevent relapse of chronic schizophrenic patients" (p. 431).

While medication noncompliance appears to be an important factor in the relapse process, drug maintenance without periodic outpatient treatment contacts does not appear to reduce recidivism (Anthony, Buell, Sharratt, & Althoff, 1972; Hogarty et al., 1974).

After-care or outpatient clinics usually provide medication monitoring and therapy services to the discharged psychiatric patient. In Anthony et al.'s (1972) review of the efficacy of rehabilitation efforts, it was reported that after-care clinics demonstrated a significant decrease in the recidivism rate for the discharged psychiatric patients who chose to attend. Within 6 months to 1 year after hospital discharge, reported recidivism rates for after-care attenders had been no higher than 26% and typically lower than 20%, which were less than the 6-month recidivism base rate of 30% to 40% and the 1-year recidivism base rate of 40% to 50%. More recently, Caton, Showlong, Fleiss, Barrow, and Goldstein (1985), in a report on rehospitalization in chronic schizophrenia, found after-care compliance to be significantly related to length of subsequent rehospitalization episodes, accounting for 14.5% of the variance.

Anthony et al. (1972) noted that although after-care clinics reduce recidivism, it is not clear whether this positive effect is due primarily to the medication administered, to the other kinds of services offered, or to the type of patient who attends. A related issue is the high rate of noncompliance with after-care treatment. One group of researchers reported that of the 13,450 clients seen in 19 mental health facilities, 40% terminated treatment after one session (Anthony et al., 1978).

Prodromal signs and early insight. The fact that many patients relapse regardless of maintenance medication led some investigators

to study the nature of the early warning signs of relapse in schizophrenia, the prodromal period before onset of an episode requiring hospitalization. Based on an extensive literature review, Docherty, Van Kammen, Siris, and Marder (1978) found that despite the different methods used to study the question, there was substantial correspondence in the descriptions of identifiable prodromal signs before onset of schizophrenic psychosis. They differentiated five stages of schizophrenic decompensation: (a) overextension, (b) restricted consciousness, (c) disinhibition, (d) psychotic disorganization, and (e) psychotic resolution.

Noting that the literature reviewed by Docherty et al. was largely anecdotal, Herz and his colleagues (Herz, 1984; Herz & Melville, 1980) decided to study a large sample of patients ($\underline{N}$ = 145) from two locations over a 2-year period. The results indicated that 70% of patients and 90% of their families noticed changes in patients' thoughts, feelings, or behaviors that might have led them to believe they were becoming sick and might have to go to the hospital. Such prodromal signs preceded the need for hospitalization by more than 1 day in 90% of the cases and by more than 1 week in more than one-half of the patients. The Spearman rank-order correlation of symptoms that appeared or worsened before hospitalization was .85 between patient groups from the two locations. The symptom reported by most patients was becoming tense and nervous (80% and 71%). Other symptoms most frequently mentioned by patients were eating less (72% and 50%), trouble concentrating (70% and 57%), trouble sleeping (67% and 62%), enjoying things less

(65% and 53%), restlessness (63% and 59%), depression (61% and 64%), seeing friends less (60% and 55%), loss of interest in things (57% and 57%), and perception of being laughed at and talked about (60% and 52%). Although Herz and Melville (1980) did not find distinct stages of symptoms, their finding that there was usually a nonpsychotic prodromal period confirmed Docherty et al.'s results. The authors recommended further research of a prospective nature to supplement their own retrospective research effort.

In another retrospective study, Heinrichs, Cohen, and Carpenter (1985) focused on two questions: whether patients have insight into the signs of impending relapse and, if so, whether such early insight might predict a successful resolution of the episode on an outpatient basis without the need for rehospitalization. Using clinical progress notes of the 38 patients in the sample, the authors found that 63% demonstrated early insight, and of these only 8% were rehospitalized. In contrast, 50% of the uninsightful patients required hospitalization as a result of the relapse.

Subotnik and Neuchterlein (1986) recently examined prodromal signs within a prospective research design. Specifically, the authors examined the 2-month period before 17 psychotic relapses among 23 nonchronic (recent onset) schizophrenic patients and compared prodromal signs and symptoms during this period with periods that did not precede relapse for the same patients and for 28 schizophrenic patients who did not relapse. Using the Brief Psychiatric Rating Scale, the authors found that even slight

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elevations in a number of symptoms above the levels usually present for a given patient may presage psychotic relapse during the 6 to 8 weeks before its occurrence. Within-patient analyses of variance (ANOVAs) indicated significant effects for elevations in depressive mood, guilt, delusions, hallucinations, and somatic concern. When compared to nonprodromal periods of other patients, periods before relapse were found to show significantly higher levels of hostility and grandiosity.

Stress vulnerability and the role of the family. According to Subotnik and Neuchterlein (1986), the prodromal signs and symptoms identified in schizophrenic decompensation may be explained by a heuristic vulnerability/stress model (Neuchterlein & Dawson, 1984). This model postulates the presence of enduring vulnerability characteristics such as reduced capacity to process environmental stimuli, autonomic hyperreactivity to aversive stimuli, and social competence and coping deficits. These characteristics are assumed to be present before, during, and after schizophrenic psychotic episodes and may vary in their severity from one patient to another (Neuchterlein & Dawson, 1984). The model incorporates two major classes of stressors that interact with the vulnerability characteristics: social stressors and nonsupportive social network. Social stressors, such as discrete life events and family stress, are reviewed next. Following this review, the other major class of stressor, a nonsupportive social network, is covered in the section on social support.

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Stressful life events such as marriage, divorce, birth or illness of a child, death of a loved one, and loss of a job or one's health have frequently been identified as mediators of depression (Dohrenwend & Egri, 1981). For example, in a 12-month study of 424 psychiatric patients diagnosed as unipolar depressive, both inpatient and outpatient subjects who improved reported life stressors only slightly higher than stressors reported by the matched community control group, whereas unimproved subjects reported more than twice as many negative events than controls (Billings & Moos, 1985).

Based on a review of controlled studies with the schizophrenic population (Birley & Brown, 1970; Brown & Birley, 1968; Jacobs & Myers, 1976), Dohrenwend and Egri (1981) reported the consistent finding that there was a significantly higher rate of stressful life events for the patients than the controls; the reporting period ranged from 3 months to 1 year. Brown and Birley (1968) found that 46% of the schizophrenic patients experienced at least one stressful life event in the 3-week period before symptom onset, whereas only 14% of the normal controls experienced such an event. Jacobs and Myers (1976) found 3.2 total stressful life events in the previous year for patients compared to 2.1 for controls.

Other investigators have concluded that although stressful life events may play a role in onset and recurrence of schizophrenic episodes, this role is quite trivial (Brown, Harris, & Peto, 1973). In an extensive review of the research examining the relationship between life events and schizophrenic episodes, Lukoff, Snyder,

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Ventura, and Neuchterlein (1984) divided the literature into three groups. Type I studies have found that life events play a major triggering role for episodes of relapse; Type II studies have found an increase in life events before onset, but the occurrence of life events was not independent of the influence of the patient's behavior--"stress-prone patterns of living" (Zubin & Spring, 1977) may describe patients in this group; Type III studies have reported no relationship between life events and the onset of schizophrenic episodes (Lukoff et al., 1984).

One of the factors that appears to influence the probability of stressful life events being associated with relapse is the familial emotional environment (Neuchterlein & Dawson, 1984). This finding emerged in one of several research studies on "expressed emotion" (EE) (Vaughn & Leff, 1976), an index of hostility, emotional overinvolvement, and criticism in families of schizophrenics. Leff and Vaughn (1980) found that recently hospitalized schizophrenic patients from low EE families were significantly more likely to have experienced a stressful life event in the 3 weeks preceding illness onset (56%) than were the patients from high EE families (5%). Lukoff et al. (1984) suggested that these findings may indicate that high EE families generate sufficient stress to precipitate a relapse, obviating the need for an independent life event trigger. Conversely, for patients from low EE families, life events do seem to play a triggering role in the onset of episodes.

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Regardless of the role of life events, family expressed emotion has been shown to play a major role in the occurrence of relapse in the schizophrenic population (Brown, Monck, Carstairs, & Wing, 1962; Hooley, 1985; Koenigsberg & Handley, 1986). In a replication of the original study (Brown et al., 1962), Brown, Birley, and Wing (1972) examined the family relationships of 91 schizophrenics. Family members were rated high on expressed emotion if they scored high on scales measuring critical comments, emotional overinvolvement, or hostility. Measures of EE taken from patients' relatives at the time of hospital admission significantly predicted patients' symptomatic relapse over the 9-month follow-up period. More than three times as many patients from high EE families relapsed (58%) as patients from low EE families (16%).

Two replications of Brown's work have been carried out. Vaughn and Leff (1976), using the same EE scales and diagnostic procedures with a shortened family interview, found similar results with 37 schizophrenics. Of those from high EE families, 48% relapsed over a 9-month period compared to 6% of those from low EE families. Low contact with relatives (under 35 hours per week) and regular antipsychotic medication acted as protective factors for high EE patients. In the United States, Vaughn et al. (1982) conducted another replication study. Once again, the EE index proved to be the best single predictor of symptomatic relapse in the 9 months following discharge from the hospital ($\underline{N}$ = 54; high EE relapse = 56%; low EE relapse = 17%).

One interesting finding to emerge from Vaughn and Leff's (1976) data is that the relationship between relapse and EE does not seem to be unique to schizophrenia (Hooley, 1985). This is suggested by results from a depressed control group. These authors defined high EE families by two critical comments and/or marked emotional involvement and/or hostility as opposed to six or seven comments used to define high EE in families of schizophrenics. Using the reduced criticism threshold, a significant relationship emerged between high EE and relapse. Specifically, 67% of the depressed patients who had high EE relatives relapsed over the follow-up period; only 22% of those living with low EE relatives did so. In a replication of this study, using a sample of 39 depressed and married psychiatric hospital inpatients, Hooley (1985) found spouses' EE levels to be significantly associated with relapse rates over 9-month follow-up: 59% of patients living with high EE spouses relapsed, and none of the patients living with low EE spouses relapsed.

Finally, Caton et al.'s (1985) study of rehospitalization of schizophrenics bears mention in this context. Although patients in this investigation were living in a variety of family and nonfamily settings (whereas patients in the above-cited studies were in family settings), and interpersonal stress was measured by interviewer assessment of the frequency and intensity of interpersonal conflicts in the living environment, the findings on the role of interpersonal stress still paralleled those of the EE studies. Interpersonal

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stress accounted for 9.9% of the variance in the occurrence of rehospitalization over the 1-year follow-up period.

Social support. Lukoff et al. (1984) suggested that another factor affecting the relapse or recovery process of schizophrenic patients is social support: "Social support is a positive environmental factor that may serve as a buffer for stressful life events and situations, thereby attenuating the likelihood of schizophrenic relapse" (p. 282). Yet, a number of studies have found a lower rate of social interaction among schizophrenic patients compared with nonschizophrenic populations, with the rate of chronic patients being particularly low (Wallace, 1984).

The work of Strauss and Carpenter (1974, 1977) reviewed earlier provides compelling evidence that social relationships are important to outcome. The results of a 5-year follow-up conducted with 61 of the 85 schizophrenics in the original sample indicated that level of preadmission social contacts was a more powerful predictor of 5-year multidimensional outcome than any of the other prognostic variables, accounting for 12% to 20% of the variance in each outcome variable (Strauss & Carpenter,1977). Caton et al. (1985), in their study of rehospitalization of 119 schizophrenics, reported a nonsignificant trend for patients with good social support to survive longer in the community than patients in environments with poor social support.

Aspects of social relationships that may be helpful for patients recovering from psychotic episodes were explored by Breier and Strauss (1984). Their sample included various disorders: schizophrenia, bipolar affective, major depressive, and

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schizoaffective. The authors obtained their data by conducting semistructured interviews with 20 patients who had been hospitalized for a psychotic episode. Interviews were conducted bimonthly over a 1-year period after discharge from the hospital. Breier and Strauss distilled two phases of the recovery process and 12 beneficial functions of social relationships based on the interviews. One aspect of recovery, which the authors termed convalescence, involves getting over the experience of the psychotic episode itself. The functions described by patients as most useful during this phase were ventilation, reality testing, social approval and integration, material support, problem solving, and constancy. The second, rebuilding, phase involves putting one's life together. During the rebuilding phase, the functions of social relationships used in the earlier phase persisted for many subjects, but new functions became emphasized: motivation, reciprocal relating, symptom monitoring, empathic understanding, modeling, and insight.

Numerous studies have identified social support as an important factor related to the onset and maintenance of depressive disorders (e.g., Billings & Moos, 1985; Costello, 1982; Coyne, Aldwin, & Lazarus, 1981). Billings and Moos (1985) examined the posttreatment (recovery) phase of unipolar depression by assessing the personal and social-environmental characteristics of improved, partially improved, and unimproved depressed patients. Their sample was based on a 12-month follow-up of 424 depressed inpatients and outpatients ($\underline{N}$ = 380 due to attrition) and a comparable follow-up of

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demographically matched, nondepressed community controls. Billings and Moos measured social support by number of friends, number of network contacts, number of close relationships, quality of significant relationships, family support, and work support. The authors found significant group differences in the number and perceived supportiveness of their social resources, with improved patients reporting more social resources than unimproved patients, and patients in partial remission showing an intermediate level of social support. At follow-up, improved patients showed increases in all areas compared to intake data, although these improvements reached statistical significance for only two variables, quality of significant relationships and family support. Results of analyses using a measure of social functioning and activity also indicated significant differences between improved and unimproved patients at 12-month follow-up, with the unimproved group participating less actively in family and social roles, being less likely to be employed, earning less money, and receiving less social support than the improved group.

General social skills, personal, and coping resources. In addition to social support, a considerable body of research has highlighted the role of general social skills, personal, and coping resources as intervening factors in the adaptation process (Moos & Billings, 1982). Much of the available literature has grown out of the interest in human adaptation to stress and relates to applications in nonpsychiatric populations. For present purposes, only that research most useful to identifying aspects of coping

resources relevant to the process of relapse or recovery in psychiatric disorders is included.

Based on a review of the literature investigating the role of community and interpersonal functioning in the outcome of schizophrenic disorders, Wallace (1984) found that the strongest relationships appeared to be between patients' general socialization skills and outcome. For example, Lorei (1964) found that ratings of social adequacy were significantly related to probability of rehospitalization within 9 months in a study of 104 patients, 79% of whom were schizophrenic. Social adequacy was measured by a 12-item scale that assessed such variables as patients' appropriate use of money, appropriate personal appearance and habits, quality of interpersonal relationships, and consideration of others. Wallace noted that although the correlation between the social adequacy score and rehospitalization was low (r = .20), it was as high as the correlations of rehospitalization with other variables such as total previous hospitalizations and past employment.

As discussed earlier, Anthony et al. (1978), in their major review of psychiatric rehabilitation outcome studies, concluded that outcome appeared to be related more to the patient's skill and activity level than to symptomatology. They stated: "The most potent ingredients positively affecting rehabilitation outcome seem to be the training of clients in the skills needed to function in the community and the development and use by the client of various community support facilities and persons" (p. 379). These authors

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included the following among the typical skills clients may require to function effectively in the community: being well groomed, eating nutritious foods, making friends, explaining problems to others, setting goals for self, controlling emotions, and making decisions with family.

Lukoff et al.'s (1984) review led the authors to conclude that deficits in such basic social skills may contribute to ineffective problem-solving behaviors and receipt of social support in schizophrenic patients. Other deficiencies, such as difficulty in sustaining focused attention over time and in processing information when stimuli are complex, may also play a role in reducing the effectiveness of schizophrenics' behavioral coping strategies. These authors also suggested that overappraisal of external demands and underappraisal of internal resources could undermine the success of patients' cognitive coping efforts. Finally, Lukoff et al. speculated that the low self-esteem found in most schizophrenic patients may contribute to their perceiving themselves as less capable of resolving problematic situations.

In the present study, post-hospital adjustment self-efficacy, not global self-esteem, was hypothesized to be an important mediator of behavior. Bandura (1986) viewed self-esteem as an aspect of self-referent thought to be differentiated from self-efficacy. Self-esteem pertains to the global evaluation of self-worth, whereas self-efficacy percepts refer to judgements of personal capabilities, which vary across different activities, different levels of the same activity, and different circumstances.

General coping resources (e.g., global self-esteem) and cognitive coping resources have been investigated more frequently in the context of depression than in schizophrenia or other psychiatric disorders. For example, in the study described earlier, Billings and Moos (1985) explored the personal resource of self-esteem and coping responses for stressors among depressed and nondepressed subjects. In comparison to controls, unimproved patients were significantly lower on a self-esteem index and used less problem-solving coping (reflected in measures of information seeking and problem solving) and more emotional discharge coping (reflected in measures of affective regulation and emotional discharge). Between intake and follow-up, improved patients reported significant increases in self-esteem and problem-solving coping and reductions in emotional discharge coping.

Most of the research on cognitive coping resources in the etiology, maintenance, and treatment of depression and anxiety over the last two decades has focused on the assessment of trait-like characteristics of individuals. Dobson (1988) conceptualized these assessment perspectives as attempts to investigate cognitive structural constructs, as opposed to assessment of cognitive process functioning as exemplified by self-efficacy measurement. Within the former category, Dobson included attempts to assess relatively broad and temporally stable cognitive structures, such as schemas, cognitive styles, and attributions, derived from various cognitive-behavioral perspectives. In the cognitive process category, Dobson

stated that assessment is much more difficult to characterize because measures "examine temporally brief, situationally specific, and individually sensitive aspects of cognition" (p. 406). He cited the self-efficacy predictions made by phobics during treatment as an example of this type of assessment.

In terms of Dobson's distinction, the focus of the present research was the assessment of self-efficacy as a cognitive process concept. Unfortunately, as Segal and Shaw (1988) pointed out in their review of issues and methods in cognitive assessment, it is accurate to characterize cognitive structure and process assessment efforts in both anxiety and depression as still in their infancy. Attempts at assessment of cognitive appraisal processes in other dysfunctions in the inpatient population are virtually nonexistent (e.g., Lukoff et al., 1984). However, since the literature related to cognitive structures has lain some groundwork for the relevance of cognitive factors in psychopathology, an overview of this research is presented next.

Two of the major cognitive theories of depression are Beck's (1967, 1976) model and the attributional reformulation of learned helplessness theory (Abramson et al., 1978). Both theoretical perspectives postulate enduring cognitive characteristics that differentiate depressed and nondepressed individuals. Abramson et al. (1978) hypothesized that some depression-prone individuals show a relatively enduring style to attribute negative outcomes to internal, stable, and global causes and to view these outcomes as very important. Beck's theory also postulates a maladaptive

thinking pattern comprised of habitual, dysfunctional thoughts and attitudes (i.e., cognitive distortions) about the self, the world, and the future, which characterize the hypothesized trait-like depressive cognitive style.

Beck's cognitive theory of depression has spawned numerous assessment tools, the majority of which are self-report paper-and-pencil measures. One of the more frequently used measures is the Dysfunctional Attitudes Scale (DAS) designed by Weissman and Beck (Weissman, 1979; Weissman & Beck, 1978) to identify the relatively stable set of attitudes proposed to be associated with depressive disorders. According to Segal and Shaw (1988), the DAS items are typically stated as contingencies concerning approval from others, prerequisites for happiness, or perfectionistic standards, e.g., "It is difficult to be happy unless one is good looking, intelligent, rich, and creative"; "People will probably think less of me if I make a mistake." Subjects indicate the degree to which they agree or disagree with the stated attitudes on a 7-point scale.

Peterson et al. (1982) developed the instrument most frequently used in research to detect the negatively biased attributions postulated by the causal attribution theory of Abramson et al. (1978): the Attributional Style Questionnaire (ASQ). In this assessment procedure, subjects are presented with 12 hypothetical situations, six with good outcomes and six with bad outcomes. The subject is asked to imagine him/herself in each situation and to describe the major cause of the event. Subjects are also asked to

indicate whether the cause is due to (a) internal versus external reasons, (b) stable versus unstable factors, and (c) global versus specific factors (Segal & Shaw, 1988).

Recent reviews of the attribution and depression literature have drawn inconsistent conclusions (Brewin, 1985; Coyne & Gotlib, 1983; Peterson & Seligman, 1984). Segal and Shaw (1988) reported similar inconsistency of findings concerning Beck's model. However, there appears to be little disagreement among reviewers that the evidence to date supports the proposal that altering the cognitive dysfunction associated with affective disorders provides a powerful means of treatment (Shaw & Segal, 1988). One of the major areas of methodological controversy concerns whether the cognitive patterns being assessed reflect trait-like or state-dependent characteristics. For example, in a study on inpatients, Hamilton and Abramson (1983) observed that the ASQ was basically a state-dependent measure of depression. Eaves and Rush (1984), on the other hand, found ASQ scores to be stable between periods of the episode and periods of remission. Another major unresolved question is whether cognitive therapies alter the likelihood of future episodes by reducing the individual's vulnerability to the disorder (Segal & Shaw, 1988).

Although further research on the role of cognitive structures in the etiology, maintenance, and treatment of depression is needed, particularly in inpatient populations, the evidence clearly supports the existence of an association between clinical improvement and changes in certain cognitive variables (Segal & Shaw, 1988). The research reviewed earlier (Bandura et al., 1980; Kanfer & Zeiss,

1983) on the role of self-efficacy as a mediator in affective disorders provides support for the importance of cognitive process variables in recovery from these disorders and also demonstrates a link with actual behavioral outcome in outpatient populations.

One final study deserves mention in the context of cognitive change processes and coping resources potentially relevant to recovery from psychiatric hospitalization. Noting the lack of data concerning the clinically significant changes besides symptom reduction that occur during brief psychiatric hospitalization, Lieberman and Strauss (1986) undertook an exploratory study to investigate this question. The authors conducted semistructured interviews with 20 patients at the beginning and end of a 1-month inpatient stay. Reviews of interview transcripts and audiotapes indicated "changes were common and striking along three dimensions: the patients' cognitive assessment of situations, the nature of the patients' relationships to other people, and the perceptions the patients had of themselves." Lieberman and Strauss argued that since cognitive functioning, self-esteem, and perceptions of other people were shown to be important dimensions of improvement during brief hospitalization, they deserve further study as predictors of both hospitalization and post-hospitalization outcome.

Conclusions

The central component of self-efficacy theory is self-efficacy expectations, referring to people's beliefs about their capabilities to affect certain outcomes in their lives. Applications of the

theory to varied populations and behavioral domains suggest that efficacy expectations operate as a significant cognitive factor influencing relapse and recovery processes in health behaviors.

Relapse and recovery processes in the psychiatric inpatient population have been the subject of a great deal of research. Although previous researchers have found several social, psychosocial, and psychiatric correlates of psychiatric hospital readmission, results have often been confusing or unimpressive. Several investigators have called for further study of the basic cognitive and social processes potentially mediating the post-hospital adjustment of psychiatric inpatients, employing greater theoretical and methodological precision.

This study represents the first step in initiating research applying the social-cognitive theory of self-efficacy to the domain of psychiatric inpatient recovery and relapse. To establish a foundation for predictive studies of the relationship between self-efficacy and relapse and recovery in this population, an assessment tool is needed to determine if post-hospital adjustment self-efficacy can be measured reliably and validly.

The Post-Hospital Adjustment Self-Efficacy (PHASE) Scale was developed on the basis of the psychiatric recidivism literature reviewed, which suggested that several domains of psychosocial behavior should be included in the domain sampling for the scale: personal habits and hygiene, social skills, social activities and social support, cognitive and behavioral coping resources,

medication and therapy behaviors, and positive self-statements. Investigation of the initial construct validity of the PHASE Scale was based on the self-efficacy literature reviewed. In particular, instrument-validation hypotheses were formulated based on the theoretical assertion and empirical evidence that self-efficacy is derived from past performance, or mastery, experiences and internal arousal cues.

CHAPTER III

METHODOLOGY

In this chapter, the design of the study is presented. The chapter is organized under four main headings: sampling procedures, instruments, procedures for data collection, and design and data-analysis procedures. The Instruments section includes a description of the development of the PHASE Scale.

Sampling Procedures

The sample for this study was drawn from the population of psychiatric patients admitted to an acute-care psychiatric hospital in a medium-sized metropolitan community in the Midwest during a 10-month interval. Patients were asked to volunteer to participate in the research project if they met specified selection criteria. Specifically, patients were considered eligible for participation if they had been hospitalized on the unit for at least 7 days, were within 3 days of being discharged from the hospital, were not being discharged to any other inpatient psychiatric facility or other institution, and were not diagnosed mentally retarded.

A pool of approximately 300 patients were evaluated for participation in the study during the data-collection period. The final sample consisted of 103 subjects. Seventy-seven patients were

not approached because they did not meet the selection criteria as determined by the investigator in collaboration with hospital staff. Fifty-five eligible patients declined to participate in the study. Of the remaining patients, 42 were discharged before they could be approached to participate or were excluded because they remained in the hospital longer than 3 days after completing the instruments. Twenty-four patients who had completed the instruments were readmitted during the data-collection period; these patients were not asked to participate again. A description of the sample is presented in Chapter IV.

Instruments

Post-Hospital Adjustment Self-Efficacy (PHASE) Scale

Development of the PHASE Scale. A review of the research relevant to psychiatric relapse and recovery, presented in Chapter II, was conducted by this investigator and two Ph.D. counseling psychologists to identify behaviors that had been associated with psychiatric outcome. The research team also relied on their clinical experience with hospitalized psychiatric patients and previous research applying self-efficacy to other populations and domains of behavior in generating an extensive pool of items designed to measure the factors identified in the literature.

The process of item generation, editing, and selection was designed to maximize content validity. Only those items that were consensually validated by all members of the research team were included in the first-phase item pool. As an additional check to

ensure content validity of the items, the questionnaire was reviewed by 3 psychiatrists and 30 mental health professionals who had considerable clinical experience in psychiatric inpatient treatment and community support services. Two of the psychiatrists and five of the mental health therapists provided suggestions on additional items, questionable items, and rephrasing of items.

Based on this feedback, revisions were made and items were carefully reviewed to ensure that they were phrased in clear and understandable language. The resulting questionnaire was forwarded to and reviewed by Dr. Bandura, originator of the theory of self-efficacy and the pioneer researcher in the field. He suggested a few modifications, which were incorporated in a minor revision of the PHASE Scale.

To evaluate the appropriateness of the PHASE Scale and the feasibility of proposed research procedures, a pilot investigation was then conducted with 12 psychiatric patients on another unit of the same hospital from which the sample was to be drawn. The investigator asked each patient to share his or her reactions to the questionnaire and to comment on any difficulties they experienced or suggestions for change. The results of this exploration resulted in revisions to clarify instructions and the language of a few items. Based on patients' apparent difficulty in making discriminations using a 10-point Likert scale, a decision was also made to change the response format to a 5-point Likert scale.

As a final check on the comprehension level required for the PHASE Scale, a test of readability of the instrument was conducted. The computer program called "Fog Finder" was used to evaluate level of reading difficulty. The Gunning Fog Index measures the complexity of written material as an average grade level at which the text could be easily read. The Fog Index for the PHASE Scale was 7.8, suggesting that it could be read and understood by individuals who had not completed the eighth grade of school.

In completed form, the PHASE Scale had 40 randomly ordered items, which were designed to measure, through self-report, subjects' beliefs in their capabilities to execute fairly specific tasks associated with post-hospital adjustment. As constructed, the PHASE Scale represented five conceptual domains of behavior: (a) Personal Habits and Hygiene (PHH), (b) Social Skills and Social Support (SS), (c) Coping Resources (CR), (d) Medication and Therapy Behavior (MTB), and (e) Positive Self-Statements (PSS).

Sample items for each behavioral domain are as follows:

Personal Habits and Hygiene (PHH

"Eat a healthy, balanced diet every day."

"Bathe/shower regularly."

Social Skills and Social Support (SS)

"Talk with others about your feelings when you feel down."

"Get involved in activities with other people."

Coping Resources (CR)

"Handle your fears and anxieties."

"Maintain concentration on a task as long as is needed."

Medication and Therapy Behavior (MTB)

"Meet with your outpatient case manager or therapist for all appointments"

"Get in touch with your therapist or case manager if you think your thoughts are beginning to give you trouble."

Positive Self-Statements (PSS)

"Think of yourself as being as good as other people."

"Say encouraging things to yourself."

The domain designation of all PHASE Scale items may be found in Table 4.4, Chapter IV.

Self-efficacy was assessed by asking participants to indicate how sure they were that they could perform each task on a 5-point scale: not at all (0), a little bit (1), moderately (2), quite a bit (3), and completely (4). Strength of self-efficacy concerning post-hospital adjustment was measured by the sum of the subject's ratings on each item. The final version of the PHASE Scale is presented in Appendix A.

Brief Symptom Inventory (BSI)

The Brief Symptom Inventory (BSI) is a brief form of the Symptom Check List (SCL-90-R) (Derogatis, 1975). The SCL-90-R is a 90-item self-report symptom inventory designed to reflect the psychological symptom patterns of psychiatric and medical patients. Derogatis and his colleagues developed the SCL-90-R from the earlier Hopkins Symptom Check List, which was based on the 1948 Cornell Medical Index.

The BSI is a 53-item version of the SCL-90-R. Instructions ask the examinee to indicate how much he or she has been distressed by various symptoms during the last 7 days. Each item is briefly and simply stated. Examples of some items are "Feeling fearful," "The idea that something is wrong with your mind," and "Feelings of worthlessness." Subjects are asked to choose a number from 0 to 4 to indicate their level of distress from each symptom: not at all (0), a little bit (1), moderately (2), quite a bit (3), and extremely (4).

The BSI may be scored in terms of nine primary symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. There are three global indices of distress, each one indicating in a single score the level of symptomatic distress. The Positive Symptom Total (PST) is a count of the symptoms reported, regardless of intensity. The Positive Symptom Distress Index (PSDI) is a pure intensity measure of distress "corrected" for number of symptoms. The General Severity Index (GSI) is the sum of ratings of intensity of perceived distress for all symptoms divided by 53. Derogatis considered this index the single best indicator of current distress levels and recommended its use in instances where a single summary measure is required (Derogatis & Melisaratos, 1983). The GSI was used in the present study to assess level of symptom distress at time of discharge.

Published norms for the BSI are available for three groups: heterogeneous psychiatric outpatients, nonpatient normal subjects, and psychiatric inpatients (Derogatis & Spencer, 1982).

Derogatis and Melisaratos (1983) reported highly satisfactory internal consistency and temporal consistency for the BSI and excellent correlations with the longer SCL-90-R. Using Cronbach's coefficient alpha, they reported internal consistency for all nine dimensions, ranging from a low of .71 to a high of .85. Test-retest reliability over a 2-week interval was reported to range from a low of .68 to a high of .91 on the nine dimensions and at .90 for the GSI, .87 for the PSDI, and .80 for the PST index.

Derogatis and Melisaratos also reported evidence for the validity of the BSI. Estimates of correlations between the BSI and the MMPI Clinical, Wiggins, and Tyron Scales ranged between .30 and .72. In a factor analysis, nine interpretable factors were derived from a normal varimax rotation of the principal components which accounted for 44% of the variance in the matrix. According to the authors, these results relating to the internal structure of the BSI lend strong additional weight to construct validation.

Kremer and Atkinson (1981) showed high convergent validity for the BSI with other scales in predicting affective status among chronic pain patients, and Peterson et al. (1981) reported significant predictive value for the BSI in a counseling center population. Other investigators have reported that the BSI demonstrated high sensitivity to changes in symptomatic distress (Amenson & Lewensohn, 1981; Marshal & Bougsty, 1980).

Global Assessment Scale (GAS)

The Global Assessment Scale (GAS) is a rating scale for overall severity of psychiatric disturbance introduced by Endicott, Spitzer, Fleiss, and Cohen (1976) as a tool for clinical research. The GAS provides a global rating of an individual's degree of disturbance along a broad continuum from positive mental health to severe mental illness. It consists of a one-page description of 10 categories of typical symptoms and behaviors; each category is rated along a 10-point interval. Scores on the GAS are assigned to an individual by a mental health professional who designates a number from 0 to 100 based on his or her assessment of the individual's symptoms and behavior as defined by the 10 categories. The 100-point scale ranges from a high end of superior psychological, social, and occupational functioning (91-100) to a low end of severe disturbance characterized by danger to self or others and the need for constant supervision (1-10). Raters are instructed to assign intermediate ratings where appropriate, for example, 48, 63, 81. A copy of the GAS may be found in Appendix B.

The GAS has received widespread usage. Considerable usage has occurred in psychiatric research studies, but its greatest use has been in public mental health evaluation studies. Dekker (1983) reported that five states were using the GAS in their statewide evaluation systems; the instrument had also been used in more than 90 published research studies. In Michigan, Department of Mental Health GAS ratings are given to all state facility inpatients and

community mental health outpatients at admission, at each 3-month update, and at discharge.

The acute-care psychiatric facility where the present research was conducted obtained GAS ratings on all psychiatric patients upon admission and at discharge. In addition, this hospital used the multiaxial diagnostic system of the Diagnostic and Statistical Manual III-Revised (DSM-III-R) (American Psychiatric Association, 1987). The 1987 revision of the DSM-III incorporated the use of a GAS rating to assess peak level of adaptive functioning during the year before admission on Axis V.

In a comprehensive review of the literature on the GAS, Dekker (1983) reported that the GAS has been shown to have adequate reliability. Of the studies reviewed, nearly all of those conducted in research-oriented, university teaching hospitals obtained inter-rater reliabilities above the overall median coefficient of .80. The range for all studies reviewed was .37 to .94.

Dekker concluded that evidence from the literature concerning the validity of the GAS depends on the purpose for which it is used. For purposes of making judgments about the severity of disturbance for psychiatric inpatients, Dekker concluded that a GAS score upon admission to a treatment facility had rather low validity. For example, correlations with the scales of the Mental Status Examination Record (Endicott, Spitzer, & Fleiss, 1975), an objectively scored record of a mental status examination, ranged from -.11 to -.44 for concurrent administration at time of admission (Endicott et al., 1976). However, the results reported by Endicott

et al. indicate that the validity coefficients of the GAS with concurrent ratings 6 months after admission were higher: -.27 to -.62.

In another concurrent validity study with inpatients, Hurt, Friedman, Clarkin, and Aronoff (1982) reported correlations of -.63 to -.73 with scores on the Hamilton Depression Rating Scale (HDRS) within 1 month after admission. The HDRS is a commonly used rating scale for the severity of depression. These results indicate that GAS scores were more than moderately associated with severity of depression in expected directions.

In the present study, GAS scores were used to assess the peak level of adaptive functioning during the year before the current admission and level of functioning at discharge. Specific support for the validity of the GAS as a measure of maladaptive behavior and community-living skills was reported by Dekker (1983) based on the results of an unpublished study by Herman (1982). This study was done on a large sample of state psychiatric hospital inpatients and after-care community group home residents. Concurrent GAS scores were correlated with ratings made by staff on self-care behaviors, community-living skills, and records of occurrence and severity of maladaptive behaviors during long-term treatment. Coefficients with community-living skills ranged from -.46 to -.54 and averaged -.49. Coefficients with the maladaptive behavior measure ranged from -.45 to -.52 and also averaged -.49. The correlations between GAS scores and ratings on self-care skills were lower, averaging -.31.

Personal Data Sheet

A Personal Data Sheet form was devised by the investigator to record information descriptive of patient characteristics including age, gender, education, voluntary or involuntary admission status, number of previous hospitalizations, presence or absence of psychotic symptoms, length of current hospitalization, number of hospital days in the last year, Diagnostic and Statistical Manual III-R (American Psychiatric Association, 1987) Axes I, II, IV, and V diagnoses, GAS ratings upon admission and discharge, and a brief description of the after-care treatment plan.

Procedures for Data Collection

Subjects in the study were drawn from the pool of eligible patients within 3 days of discharge from the hospital unit. Patients were approached by the investigator or one of two hospital staff members who had agreed to assist in data collection. Staff members were briefed about the nature of the research project and the importance of maintaining uniform administrative procedures. They were also provided with a protocol to use in recruiting patients (Appendix C) and instructed to reassure patients concerning the confidentiality of their responses if necessary.

Patients were provided with a general statement of the purpose of the project as an examination of how people feel about the tasks before them in adjusting to life in the community. An informed consent form was obtained from each subject (Appendix D) in accordance with the Ethical Principles in the Conduct of Research

With Human Participants (American Psychological Association, 1982) and the human research committee standards of Michigan State University, the tri-county Community Mental Health Board, and the hospital. A member of the clinical staff was also asked to verify that the subject was capable of understanding the meaning of his or her participation sufficiently well to give informed consent by signature on the consent form.

After informed consent to participate was obtained, copies of the PHASE Scale and the BSI were handed to the participant with a pencil. Patients were instructed not to write their names on the instruments as a number had been assigned and recorded on the instrument to protect confidentiality. The researcher read the instructions for both instruments with the patient to ensure that he or she understood the tasks. Subjects were asked to fill out the questionnaires in their rooms or communal areas of the unit and to return the completed forms to a staff member, who would place them in an envelope provided by the researcher. In most cases, patients took about 30 to 40 minutes to complete the measures.

Initial demographic and clinical data were obtained on each subject and recorded on the Personal Data Sheet by the investigator or a treatment team staff member at a case intake team meeting. Multidisciplinary team meetings were held several times a week to conduct intakes on new admissions and to review treatment plans for all patients. During these meetings, data were recorded on measures of past performance, including number of previous hospitalizations,

presence or absence of psychotic symptoms, admission status, GAS scores upon admission, and DSM-III-R diagnoses, including Axis V, peak level of adaptive functioning during the year before admission as measured by the GAS.

The two clinical staff members who had agreed to assist with the data collection monitored the discharge planning of patients and determined eligibility according to the criteria discussed earlier in the description of sampling procedures. Once a patient was identified as eligible for participation, the patient was asked to participate and the Personal Data Sheet was completed and checked for accuracy with the patient's medical record.

Design and Data Analysis

The design of the present study is essentially correlational. According to Borg and Gall (1971), correlational studies include those research projects in which an attempt is made to discover or clarify relationships through the use of correlation coefficients. Previous research on the application of self-efficacy theory to post-hospital adjustment of psychiatric patients had not been undertaken. Therefore, the purpose of the study was to attempt to identify some of the specific variables that appear to be important in the complex phenomena of psychiatric post-hospital adjustment, to develop an instrument to measure psychiatric post-hospital adjustment self-efficacy, and to investigate the initial reliability and construct validity of this measure. A correlational design was selected because this design "is especially useful for exploratory

studies in areas where little or no previous research is available" (Borg & Gall, 1971, p. 321).

The PHASE Scale was developed and empirically tested. Descriptive statistics were calculated to describe both the sample characteristics and the psychometric properties of the PHASE Scale. One form of reliability, that of internal consistency, was investigated using Cronbach's alpha coefficient. Methods designed to gain content validity for the PHASE Scale were also reviewed to evaluate the adequacy of domain sampling.

The second component of the design and data analysis consisted of an initial exploration of the construct validity of the PHASE Scale. Relationships between post-hospital adjustment self-efficacy, as measured by the PHASE Scale, and a number of independent variables selected as measures of two of the four theoretically postulated sources of self-efficacy, past performance experiences and internal arousal cues, were investigated. The statistical procedures used in these analyses included correlational, t-test, and single-factor analysis of variance models.

Supplementary Analyses

A few additional analyses were undertaken to explore (a) psychotic status as a moderator variable, (b) the theoretical assumptions underlying self-efficacy theory, and (c) the internal structure of the PHASE Scale. First, to investigate the question of whether psychotic symptoms moderated the relationship between PHASE

Scale scores and measures of patient past and current functioning, correlational analyses between these variables were performed for psychotic and nonpsychotic patients.

Second, to investigate the theoretical assumption that past performance and internal arousal represent two distinct sources of self-efficacy information, an intercorrelation matrix was constructed to explore the relationship among these variables.

Third, an exploratory factor analysis of responses to the PHASE Scale was employed to determine whether the items would empirically cluster into the conceptual behavior domains included in the a priori method of scale construction. The principal-components solution was used to examine the relationship among items and to find out how the item responses related to one another. A varimax rotation was used following the principal-factor solution. This procedure maximizes the within-factor loading for each item. The internal consistency of each factor was computed with coefficient alpha, and an intercorrelation matrix was constructed to examine the relationship among the factors.

CHAPTER IV

RESULTS

Chapter IV contains the results of the data analysis based on the procedures described in Chapter III. In addition, findings of some supplementary data analyses are reported in this chapter.

Description of the Sample

Demographic characteristics of the subject sample are summarized in Table 4.1. A total of 103 subjects, 43 females and 60 males, participated in the project. Ages ranged from 19 to 72, with a mean age of 34.89. The majority of the patient sample were of Caucasian ethnic origin. The vast majority of subjects were single, separated, divorced, or widowed, and more than half depended on some form of governmental assistance for their income. Roughly two-thirds of the sample were high school graduates.

Data descriptive of the clinical composition of the sample are presented in Table 4.2. In terms of diagnostic classification using the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R), roughly 90% of the subjects were classified in one of three major diagnostic categories: Schizophrenia (38.8%), Psychotic Disorders Not Elsewhere Classified (12.6%), and Mood Disorders (38.8%). Symptoms of psychosis were evidenced by 68.9% of the

sample upon admission to the hospital, and 63.1% of the subjects were admitted on an involuntary basis.

Table 4.1.--Demographic statistics on sample subjects.

Variable	Mean	Range	SD
Age	34.89	19-72	11.25
		N	%
Gender			
Female		43	41.7
Male		60	58.3
Ethnic Group			
Caucasian		84	81.6
Other		19	18.4
Marital Status			
Single		57	55.3
Married		7	6.8
Separated/divorced/widowed		39	37.9
Income			
Government assistance		63	61.2
Family		22	21.4
Employment		18	17.5
Education (in years)			
< 12		32	31.1
12		27	26.6
> 12, no degree		31	30.1
Bachelor's degree		6	5.8
Postgraduate work		7	6.8

Table 4.2.--Clinical descriptive data on sample subjects.

	N	%
Admission Status		
Voluntary	38	36.9
Involuntary	65	63.1
Psychosis This Admission		
Psychotic	71	68.9
Nonpsychotic	32	31.1
DSM-III-R Axis I Diagnosis		
Schizophrenia	40	38.8
Other psychotic disorder	13	12.6
Mood disorder	40	38.8
Other	10	9.7

Further descriptive information on subjects' previous psychiatric history, length of current hospitalization, global functioning, symptomatology, and after-care plans are presented in Table 4.3.

Psychometric Properties of PHASE

The original Post-Hospital Adjustment Self-Efficacy (PHASE) Scale consisted of 40 items. Four of these items instructed the subject to "Leave this item blank if this does not apply to you." These four items were omitted from the analysis of results, leaving a total of 36 items on the PHASE Scale. Table 4.4 presents all 40 items and their descriptive statistics.

Table 4.3.--Additional sample descriptive statistics.

Variable	Mean	Range	SD
Number of previous psychiatric hospitalizations	4.25	0-32	5.28
Number of hospital days in last year	13.36	0-90	21.41
Length of current hospital admission (days)	25.91	7-86	16.25
Peak global functioning in past year[a]	59.18	30-90	10.92
Global functioning at discharge[a]	61.79	40-80	9.09
General index of symptom severity at discharge[b]	.95	0-3.09	.70

	N	%
Severity of psychological stressors in last year[c]		
Mild	37	35.9
Moderate	38	36.9
Severe	21	20.4
Unknown	7	6.8
After-care plan		
Case management only	80	77.7
Case management and day treatment	15	14.6
Other	8	7.7
After-care living situation		
Nonsupervised[d]	60	58.2
Supervised[e]	43	41.8

[a]Based on the Global Assessment Scale (GAS) score; possible range 0-100.

[b]Based on General Severity Index of the Brief Symptom Inventory; possible range 0-4.

[c]DSM-III-R Axis IV diagnosis.

[d]Independent living alone or with others.

[e]Supervised living with family or in group home.

Table 4.4.--PHASE Scale items and descriptive statistics.

Item	Sub-Scale	Mean	SD	Range
1. Wear clean clothes regularly.	PHH	3.53	.70	1.0-4.0
2. Manage spending and saving money.	PHH	3.03	1.10	0.0-4.0
3. Find ways to work out "every-day problems."	CR	2.74	1.08	0.0-4.0
4. Ask for support from others when you need it.	SS	2.68	1.14	0.0-4.0
5. Manage or ignore thoughts that bother you.	CR	2.51	1.36	0.0-4.0
6. Talk with at least one person every day.	SS	3.30	1.07	0.0-4.0
7. Stay out of trouble with the law.	CR	3.60	.76	0.0-4.0
8. Handle the problems you were having before you came to the hospital.	CR	2.75	1.24	0.0-4.0
9. Get at least 6 hours of sleep every night.	PHH	2.98	1.14	0.0-4.0
[a]10. Go to day treatment, work, or school when you are supposed to. (Leave this item blank if this is not part of your current plans.)	SS	3.25	1.11	0.0-4.0
11. Get involved in activities with other people.	SS	2.84	1.16	0.0-4.0
12. Get along well with other people.	SS	3.14	.95	0.0-4.0
[a]13. Change or stop your medication only with your doctor's agreement. (Leave this item blank if you are not currently on medication.)	MTB	3.47	.88	0.0-4.0
14. Keep all your appointments with your doctor (not miss appointments).	MTB	3.41	.89	0.0-4.0
15. Eat a healthy, balanced diet every day.	PHH	2.98	1.11	0.0-4.0

Table 4.4.--Continued.

Item	Sub-Scale	Mean	SD	Range
16. Bathe/shower regularly.	PHH	3.46	.79	0.0-4.0
17. Get your ideas across clearly to others.	SS	2.85	1.14	0.0-4.0
[a]18. Stay in a job, day program, or school for 1 year or longer. (Leave blank if this isn't part of your current plans.)	SS	2.95	1.26	0.0-4.0
19. Talk with someone when you are worried about something.	SS	2.72	1.18	0.0-4.0
20. Say encouraging things to yourself.	PSS	2.64	1.30	0.0-4.0
21. Stay away from alcohol and street drugs.	CR	3.29	1.12	0.0-4.0
22. Think of yourself as being as good as other people.	PSS	3.01	1.19	0.0-4.0
23. Meet with your outpatient case manager or therapist for all appointments.	MTB	3.31	.86	0.0-4.0
24. Talk about your future hopes and plans in a positive way.	PSS	3.08	1.02	0.0-4.0
25. Handle situations involving your family.	SS	2.75	1.21	0.0-4.0
26. Maintain concentration on a task as long as is needed.	CR	3.04	1.00	1.0-4.0
27. Set realistic goals for yourself.	PSS	2.95	1.12	0.0-4.0
28. Notice if there are changes in your thoughts, feelings, or behavior that are beginning to give you trouble.	CR	2.73	1.12	0.0-4.0
29. Help yourself to improve by working with your therapist.	MTB	3.25	.87	1.0-4.0
30. Keep a few close relationships going.	SS	3.00	1.17	0.0-4.0

Table **4.4.**--Continued.

Item	Sub-Scale	Mean	SD	Range
31. Maintain a good energy level (one that is not too high or too low).	CR	2.96	1.05	0.0-4.0
32. Keep from physically hurting yourself.	CR	3.28	1.16	0.0-4.0
33. Get in touch with your therapist or case manager if you think your thoughts are beginning to give you trouble.	MTB	3.12	1.10	0.0-4.0
[a]34. Take your medication when you are supposed to. (Leave this item blank if you are not currently on medication.)	MTB	3.57	.72	0.0-4.0
35. Keep yourself from behaving in ways that other people think are odd.	CR	2.90	1.13	0.0-4.0
36. Control your anger and temper.	CR	3.06	1.00	0.0-4.0
37. Do activities you enjoy on a regular basis.	SS	2.88	1.17	0.0-4.0
38. Handle your fears and anxieties.	CR	2.93	1.03	0.0-4.0
39. Keep yourself from having suicidal thoughts.	CR	3.04	1.30	0.0-4.0
40. Talk with others about your feelings when you feel down.	SS	2.72	1.26	0.0-4.0

[a]Items deleted from reliability and validity analyses;
10. N = 85; 13. N = 90; 18. N = 75; 34. N = 95.

Note. PHH = Personal Habits and Hygiene
       SS = Social Skills and Social Support
       CR = Coping Resources
       MTB = Medication and Therapy Behavior
       PSS = Positive Self-Statements

Reliability

Hypothesis 1: The internal consistency of the items on the PHASE Scale will be sufficiently high to infer homogeneity of the construct of self-efficacy in post-hospital adjustment.

Cronbach's alpha was used to assess the degree of reliability for the PHASE Scale. Coefficient alpha estimates the proportion of the instrument variance due to all common factors among the items. Specifically, it indicates how much the score depends on general and group, rather than item-specific, factors (Cronbach, 1951). If a measure has a high alpha coefficient, it is said to have substantial internal consistency or homogeneity, indicating that its items reflect the same construct. The results of the reliability analysis on the PHASE Scale items and subscales of items are given in Table 4.5.

Scores for the PHASE Scale ranged from 42 to 144, with a mean of 108.42 ($\underline{SD}$ = 25.17). A summary of descriptive statistics for the PHASE Scale and subscales is presented in Table 4.6. Table 4.7 shows the score distribution of the PHASE Scale; Figure 4.1 portrays the distribution graphically. A Cronbach's alpha coefficient of .96 was obtained for the total instrument, as shown in Table 4.5. The alpha coefficients for the subscales ranged from .71 to .91. These findings demonstrate that there is good internal consistency for the total PHASE Scale and moderate to high internal consistency for the five subscales. All alpha coefficients obtained fall above the acceptable alpha minimum of .70 for early stages of research on hypothesized measures of a construct (Nunnally, 1978). Thus, the

results indicate that the internal consistency of the PHASE Scale is sufficiently high to infer that it is measuring a homogeneous construct.

Table 4.5.--Measures of internal consistency and intersubscale correlations.[a]

Scale or Subscale	Scale or Subscale					
	Total PHASE	PHH	SS	CR	MTB	PSS
Total PHASE	(.96)	.81	.94	.96	.69	.88
PHH (4 items)		(.71)	.71	.73	.52	.66
SS (10 items)			(.91)	.84	.57	.82
CR (13 items)				(.88)	.64	.83
MTB (4 items)					(.83)	.43
PSS (4 items)						(.88)

Note. PHH = Personal Habits and Hygiene
SS = Social Skills and Social Support
CR = Coping Resources
MTB = Medication and Therapy Behavior
PSS = Positive Self-Statements

[a]Coefficient alphas are presented on the diagonal. All $\underline{p}$s < .000.

Table 4.6.--PHASE Scale summary statistics ($\underline{N}$ = 103).

	Mean	Median	Mode	Range	<u>SD</u>
Total PHASE Scale (36 items)	108.42	114	107	42-144	25.17
PHH (5 items)	15.98	17	20	7-20	3.36
SS (10 items)	28.86	30	40	4-40	8.45
CR (13 items)	38.8	41	36	13-52	9.30
MTB (4 items)	13.09	14	16	4-16	3.04
PSS (4 items)	11.68	12	16	0-16	3.98

<u>Note</u>. PHH = Personal Habits and Hygiene
         SS = Social Skills and Social Support
         CR = Coping Resources
        MTB = Medication and Therapy Behavior
        PSS = Positive Self-Statements

Table 4.7.--Total PHASE Scale score distribution.

Score	N	Cumulative %	Score	N	Cumulative %	Score	N	Cumulative %
42	1	1	94	1	29	121	4	66
43	1	2	95	1	30	122	2	68
56	1	3	96	2	32	123	1	69
60	1	4	97	1	33	124	1	70
61	1	5	100	1	34	125	2	72
65	1	6	102	2	36	126	4	76
67	1	7	103	2	38	128	1	77
70	2	9	104	1	39	130	1	78
71	1	10	105	1	40	131	1	79
73	1	11	107	4	44	132	1	80
74	1	12	108	1	45	133	1	81
77	3	15	109	2	47	134	1	82
78	1	16	111	1	48	135	1	83
79	3	18	112	1	49	136	2	84
81	1	19	113	1	50	137	4	88
83	1	20	114	2	51	138	2	90
86	1	21	115	1	52	141	3	93
87	1	22	116	2	54	142	1	94
88	1	23	117	1	55	143	2	96
90	1	24	118	4	59	144	4	100
92	2	26	119	2	61			
93	2	28	120	1	62			
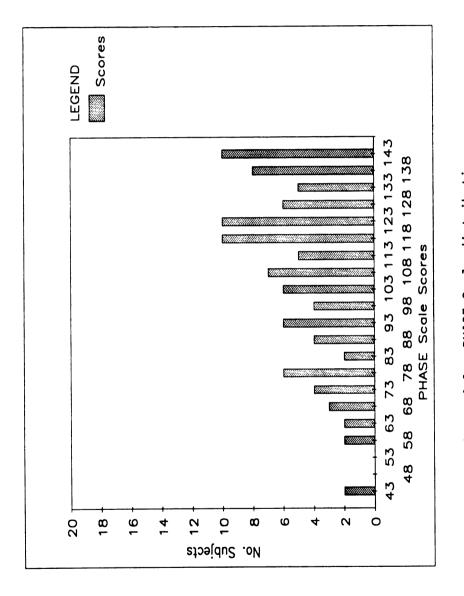
Figure 4.1.--PHASE Scale distribution.

Additional information on the psychometric properties of the PHASE Scale is given in Tables 4.5 and 4.8. Inter-item correlations for the total instrument ranged from -.02 to .72, with a mean of .39. Item-total correlations ranged from .31 to .77, with a mean of .61. Item-total statistics indicated that the alpha coefficient would remain at .96 if any item was deleted. Item means, shown in Table 4.4, ranged from 2.5 to 3.6, with an overall item mean of 3.0. Pearson correlations between the total PHASE Scale and the five subscales ranged from .69 to .96. All interscale correlations were significant at the .000 alpha level, suggesting that the PHASE Scale is measuring a unidimensional construct.

Overall, these findings demonstrated that there is good internal consistency for the total PHASE Scale and moderate to high internal consistency for the five subscales.

<u>Validity</u>

The development of a new instrument intended to measure hypothetical psychological variables must always include some inquiry into its validity. According to Nunnally (1978) and Cronbach and Meehl (1955), there are basically three types of validity corresponding to the three major functions that psychological measures serve. These three levels of validation are (a) <u>criterion-oriented validity</u> (predictive and concurrent) to establish a statistical relationship between the measure and a particular variable with which it is expected to be associated, (b)

Table 4.8.--PHASE Scale item statistics.

	Item Mean (Variance)	Item Mean Range	Inter-Item Correlation Mean (Variance)	Inter-Item Correlation Range	Item-Total Correlation
Total PHASE Scale	3.01 (.07)	2.50-3.60	.3934 (.0168)	-.0254-.7210	.3076-.7680
PHH (4 items)	3.20 (.08)	2.98-3.53	.3662 (.0230)	.1732-.6749	.2908-.5945
SS (10 items)	2.89 (.04)	2.68-3.30	.4910 (.0107)	.1948-.7099	.5299-.7707
CR (13 items)	2.99 (.08)	2.50-3.60	.3687 (.0171)	.1179-.6187	.3272-.6888
MTB (4 items)	3.27 (.01)	3.12-3.41	.5566 (.0078)	.4347-.7134	.6250-.7360
PSS (4 items)	2.92 (.04)	2.64-3.08	.6462 (.0023)	.5871-.7210	.6924-.7974

Note. PHH = Personal Habits and Hygiene
 SS = Social Skills and Social Support
 CR = Coping Resources
 MTB = Medication and Therapy Behavior
 PSS = Positive Self-Statements

content validity to ensure that the measure represents a specified universe of content, and (c) construct validity to ascertain that the instrument actually measures the psychological quality it purports to measure when no criterion or universe of content is accepted as entirely adequate to define the quality to be measured.

The design of this pilot research project included an investigation of the content and construct validity of the PHASE Scale. Since the purpose of this research was to develop an instrument with the potential for scientific study of a predictive nature, investigation of predictive validity was deemed premature and will not be addressed.

Content Validity

> Hypothesis 2: The content of the items on the PHASE Scale will be indicative of self-efficacy in the context of post-hospital adjustment.

No formal statistical test of the hypothesis was used to infer content validity. Rather, methods outlined by Anastasi (1982) and Nunnally (1978) were used to gain content validity. According to Nunnally, one should ensure content validity by the plan and procedures of initial instrument construction. The two major standards for ensuring content validity are (a) a representative collection of items and (b) "sensible" methods of test construction (Nunnally, 1978).

Based on the instrument-construction procedures described in detail in Chapter III, it seems reasonable to infer that the PHASE Scale has sufficient content validity in that (a) the content

domains were drawn from an extensive review of the literature on post-hospital adjustment of psychiatric patients as well as clinical expertise, (b) a team of expert judges in the fields of psychiatric care and self-efficacy theory provided input into the processes of item construction and review, and (c) field testing of the instrument was conducted and refinements in the instrument were made based on the results.

Circumstantial evidence for content validity also was found from the reliability analysis (Carmines & Zeller, 1979; Nunnally, 1978). At least a moderate level of internal consistency among the items within a measure would be expected for the measure to have content validity. The internal consistency coefficients for both the total PHASE Scale and each of the subscales met this requirement.

Construct Validity

Preliminary analyses examined the relationship between total PHASE Scale scores and various demographic and descriptive variables. According to self-efficacy theory, one would not expect to find significant relationships from the results of these analyses. The findings given in Table 4.9 indicate that self-efficacy scores did not vary to any significant degree based on differences in age, sex, ethnicity, marital status, education, income, or length of current admission. One variable, admission

Table 4.9.--Relationships between total PHASE Scale scores and descriptive variables.

I. Correlations (one-tail probability)

	N	r	p
Age	103	.0903	.182

II. t-Tests (two-tail probability)

					Pooled Variance Estimate		
	N	Mean	SD	SE	t	df	p
Gender							
Female	43	110.67	26.97	4.11	.77	101	.44
Male	60	106.80	23.89	3.08			
Ethnic Status							
Caucasian	84	109.33	25.22	2.75	.78	101	.44
Other	19	104.37	25.19	5.78			
Education							
≤ 12 years	59	105.0	26.09	3.40	-1.61	101	.11
> 12 years	44	113.0	23.39	3.53			
Admission Status							
Voluntary	38	102.29	26.20	4.25	-1.91	101	.06
Involuntary	65	112.00	24.03	2.98			

Table 4.9.--Continued.

III. One-Way ANOVA Tests (Mean = 108.42)

Source of Variation	df	SS	MS	F	p	Eta
Marital Status						
Between	2	282.254	141.127	.219	.80	.07
Within	100	64324.794	643.248			
Total	102	64607.049				
Income						
Between	2	3415.935	1787.968	2.791	.07	.23
Within	100	61191.113	611.911			
Total	102	64607.049				
Length of Current Admission						
Between	2	168.764	84.382	.131	.88	.05
Within	100	64438.285	644.383			
Total	102	64607.049				

Note. An F-test for equality of variance between groups was nonsignificant; therefore, the t-test statistic is based on a pooled variance estimate rather than a separate variance estimate.

status, did result in a nearly statistically significant difference in self-efficacy scores based on whether patients were admitted to the hospital voluntarily or involuntarily ($p < .06$). Mean total PHASE Scale scores were higher for involuntary patients (112.00) than for voluntary patients (102.29). This finding is addressed in the discussion of results in Chapter V.

> Hypothesis 3: Number of previous psychiatric hospitalizations will be negatively related to total scores on the PHASE Scale, with patients who have had a greater number of previous hospitalizations tending to score lower than patients with fewer or no previous hospitalizations.

Subjects in this sample ($N = 103$) averaged a mean of 4.25 previous psychiatric hospitalizations, with a standard deviation of 5.28. The range of previous hospitalizations was 0 to 32. A Pearson product-moment correlation coefficient, computed between subjects' total PHASE Scale scores and the number of previous hospitalizations, was -.076 ($p < .22$), as shown in Table 4.10. Thus, although a weak trend in the expected direction was found, the results of the correlational analysis indicate that there was no significant relationship between PHASE Scale scores and number of previous hospitalizations.

Inspection of the frequency data for the number of previous hospitalizations revealed a skew in the distribution. Therefore, a one-way ANOVA was performed using four groups: subjects with no previous hospitalizations ($N = 19$), subjects with one or two previous hospitalizations ($N = 29$), subjects with three to six previous hospitalizations ($N = 33$), and subjects with more than six

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previous hospitalizations (N = 22). As the results given in Table
4.11 show, differences among groups were not significant (F = .871,
p < .46). Hypothesis 3 is not supported by the results.

Table 4.10.--Correlation of Total PHASE score with hypothesized
variables.

	N	Mean	SD	r	p
Number of previous hospitalizations	103	4.25	5.28	-.076	.22 (NS)
Peak level of adaptive functioning year before	103	59.18	10.92	.052	.30 (NS)
Adaptive functioning at discharge	103	61.79	9.09	.059	.28 (NS)
Symptom distress at discharge (GSI)	103	.95	.70	-.511	.000*

*p = .000.

Table 4.11.--One-way ANOVA of PHASE for number of previous hospitalizations.

Source of Variation	df	SS	MS	F	p	Eta
Between	3	1661.683	553.894	.871	.46	.16
Within	99	62945.365	635.812			
Total	102	64607.049	633.402			

<u>Hypothesis 4</u>: Psychotic symptoms during the current hospitalization will be negatively related to total scores on the PHASE Scale, with patients who were psychotic tending to score lower than patients who were nonpsychotic.

Of the 103 patients who completed the PHASE Scale, 71 were psychotic during this hospitalization and 32 were nonpsychotic. To test Hypothesis 4, a $\underline{t}$-test statistic of differences between group means was computed. The results are found in Table 4.12. The results indicate that there were significant differences in mean total PHASE Scale scores among patients who were psychotic compared to patients who were not psychotic. However, these differences were not in the expected direction. Specifically, psychotic patients reported higher mean scores on the PHASE Scale (112.28) than nonpsychotic patients (99.72), failing to support Hypothesis 4.

Table 4.12.--One-sample $\underline{t}$-test of PHASE for psychotic status ($\underline{N}$ = 103).

Group	$\underline{N}$	Mean	$\underline{SD}$	$\underline{t}$-Value*	$\underline{df}$	$\underline{p}$-Value*
Psychotic	71	112.28	22.28	-2.37	101	.02
Nonpsychotic	32	99.72	29.31			

[a]An $\underline{F}$-test for equality of variance between groups was nonsignificant ($\underline{F}$ = 1.72, $\underline{p}$ = .063); therefore, the $\underline{t}$-test statistic is based on a pooled variance estimate rather than a separate variance estimate.

Hypothesis 5: Level of adaptive functioning during the year previous to this hospital admission will be positively related to total scores on the PHASE Scale, with patients who have had higher levels of adaptive functioning tending to score higher than patients with lower levels of adaptive functioning.

Level of adaptive functioning during the past year was measured by psychiatric staff assignment of DSM-III-R Diagnosis V. Ratings are based on Global Assessment Scale scores, with a possible range of 0 to 100; higher scores indicate a higher peak level of adaptive functioning. Patients in this sample had a mean score of 59.18 and a standard deviation of 10.92. The range of scores was from 30 to 90. A Pearson product-moment correlation coefficient was computed to test Hypothesis 5. As shown in Table 4.10, the correlation coefficient between total PHASE Scale scores and rating of the peak level of adaptive functioning during the year before admission was .05 (p < .30). These results indicate that Hypothesis 5 is not supported, although a weak, nonsignificant trend in the expected direction was found.

Hypothesis 6: Level of adaptive functioning upon discharge from the current hospitalization will be positively related to total scores on the PHASE Scale, with patients who have achieved higher levels of functioning tending to score higher than patients who have achieved lower levels of functioning.

Psychiatric staff ratings of patients' level of adaptive functioning at time of discharge were also based on the Global Assessment Scale. The mean score was 61.79, with a standard deviation of 9.09. The scores ranged from 40 to 80. The Pearson product-moment correlation coefficient between GAS discharge ratings

and total PHASE Scale scores, computed to test Hypothesis 6, was .06 (p < .28), again indicating a weak, but nonsignificant, trend in the expected direction. The findings do not support Hypothesis 6.

> Hypothesis 7: Level of symptom distress at time of discharge will be negatively related to total scores on the PHASE Scale, with patients reporting higher levels of symptom distress tending to score lower on the PHASE Scale than patients with lower levels of symptom distress.

Level of symptom distress at time of discharge was measured by patient self-report ratings on the Brief Symptom Inventory (BSI). To test Hypothesis 7, a Pearson product-moment correlation coefficient was computed between total PHASE Scale scores and the General Severity Index (GSI) of the BSI. The GSI is the sum of the item ratings divided by the total number of items. The results of the correlational analysis, given in Table 4.10, produced a coefficient of -.51 (p < .000). Thus, the findings indicate a significant negative relationship between level of symptom distress at discharge and total PHASE Scale scores, providing support for Hypothesis 7.

Supplementary Analyses

Supplementary analyses were performed to explore (a) the question of whether psychotic symptoms moderated the relationships between PHASE Scale scores and the measures of past and current patient functioning, (b) the theoretical assumptions underlying the construct of self-efficacy in the context of psychiatric post-hospital adjustment, and (c) the internal structure of the PHASE Scale.

Psychotic Symptoms as a
Moderator Variable

In the first set of supplementary analyses, the investigator sought to determine whether the relationships of self-efficacy to the patient functioning variables might be moderated by whether patients had shown psychotic features during their current hospitalization. First, scatterplots depicting the relationships between PHASE Scale scores and previous hospitalizations, adaptive functioning variables, and levels of symptom distress were obtained for two groups derived from the sample: psychotic (n = 71) and nonpsychotic (n = 32) subjects. Visual inspection of the data did not suggest the presence of curvilinearity in relationships or clusters of observations for either group or in comparisons between the two groups.

Second, correlational analyses between PHASE Scale scores and the hypothesized patient functioning variables were performed for both groups. The results for psychotic and nonpsychotic subjects are presented in Tables 4.13 and 4.14, respectively. The findings indicate that psychotic status was an important moderator variable for symptom distress levels but not for past performance variables. Specifically, while both psychotic and nonpsychotic subjects evidenced significant relationships between PHASE scores and symptom distress levels, the relationship was much stronger for nonpsychotic (r = -.82) than psychotic (r = -.21) subjects.

Table 4.13.--Correlation of Total PHASE scores with patient
functioning variables for psychotic subjects.

	n	r	p
Number of previous hospitalizations	71	-.12	.16 (NS)
Peak level of adaptive functioning year before	71	.12	.17 (NS)
Adaptive functioning at discharge	71	.01	.46 (NS)
Symptom distress at discharge (GSI)	71	-.21	.04*

*p < .05.

Table 4.14.--Correlation of Total PHASE score with patient
functioning variables for nonpsychotic subjects.

	n	r	p
Number of previous hospitalizations	32	-.17	.18 (NS)
Peak level of adaptive functioning year before	32	.07	.36 (NS)
Adaptive functioning at discharge	32	.26	.07 (NS)
Symptom distress at discharge (GSI)	32	-.82	.000*

*p = .000.

Correlational Analyses of Past
Performance Variables and
Symptom Distress Variables

In the foregoing analyses, variables were hypothesized to be related to PHASE Scale scores because the variables were intended to reflect aspects of two theoretically derived sources of self-efficacy information: past mastery experience and internal arousal cues.

Four of the variables hypothesized to be associated with PHASE Scale scores were chosen to represent aspects of psychiatric patients' degree of success or failure in terms of past mastery experience. These variables were number of previous psychiatric hospitalizations, psychotic or nonpsychotic symptoms, peak level of adaptive functioning during the year prior to admission, and level of adaptive functioning upon discharge from the current hospitalization. Although a formal research hypothesis was not posited, a fifth variable, voluntary or nonvoluntary admission status, was also included in the group of variables designed to represent mastery experience.

A measure of internal arousal cues was also hypothesized to be associated with self-efficacy. In the context of the present research, an index of general symptom severity was used to reflect this theoretical source of self-efficacy.

A supplementary analysis of the intercorrelations between these variables was performed to investigate the relationships among these variables. The results are given in Table 4.15.

Table 4.15.--Intercorrelation among hypothesized variables.

	Number of Previous Hospitalizations	Psychotic During Current Admission	Peak Level of Adaptive Functioning Year Before Admission	Level of Functioning at Discharge	Voluntary Admission Status	General Symptom Distress at Discharge
Number of Previous Hospitalizations	1.00	.19*	-.22*	-.16	-.02	.04
Psychotic During Current Admission		1.00	-.18*	-.09	-.44*	-.26*
Peak Level of Adaptive Functioning Year Before Admission			1.00	.55*	.18*	.11
Level of Functioning at Discharge				1.00	-.01	-.08
Voluntary Admission Status					1.00	.10
General Symptom Distress at Discharge						1.00

*$p < .05$.

The findings indicate that mastery variables were significantly, though not strongly, associated with each other. A significant positive relationship was found between psychotic symptoms and number of previous hospitalizations (r = .19). Significant negative relationships were observed between psychotic symptoms and peak adaptive functioning in the past year (r = -.18) and between past previous hospitalizations and peak adaptive functioning in the past year (r = -.22). Level of functioning at discharge and peak adaptive functioning during the past year also were significantly related in a positive direction (r = .55). In other words, poor past performance in one area of mastery experience tended to be associated with poor performance in other areas.

The intercorrelations between mastery variables and internal arousal cues were generally weaker and nonsignificant, as would be expected if the two postulated sources of self-efficacy represented distinct bases of self-efficacy information. The exception of the significant negative relationship (r = -.26, p < .03) between presence of psychotic symptoms and lower internal arousal cues (GSI) is noteworthy and is discussed in Chapter V.

Factor Analysis of the Internal Structure of the PHASE Scale

An exploratory factor analysis of responses to the PHASE Scale was employed to determine if the items would empirically cluster together by the specific underlying behavior domains selected in initial scale construction or by some other conceptually logical set of behavioral components.

All 36 items of the PHASE Scale used in previous analyses were included in the factor analysis. A Varimax rotation provided a listing of eight factors with eigenvalues above 1.00. A decision was made to retain a factor if at least three items loaded on the factor with a loading equal to or greater than .40. While criteria for determining substantive importance of a variable to a factor are subjective, it is believed that an item with a higher loading is often more important than having many variables with lower loadings (Kim & Mueller, 1978). The investigator chose .40 as a liberal cut-off point because the major purpose of the exploratory factor analysis was to identify clusters of items, rather than to delete items.

Using these criteria, seven factors were retained. Of the 36 items, one item did not load significantly (above .40) on any of the seven factors and was dropped. Nine items loaded significantly on more than one factor. The investigator examined these items to assess their conceptual "fit" with other items loading significantly on each factor and made subjective allocations of the items. One item was dropped, and the remaining eight items were assigned to one of the factors. The 34 items and their factor loadings for the seven-factor structure thus derived are presented in Table 4.16.

Table 4.17 lists the items that appeared to cluster together for each factor. The factor structure that emerged did not reflect the original five domains of behavior used in constructing the PHASE Scale. An examination of the item content suggests that the first

Table 4.16.--Factor loadings for a 7-factor solution of PHASE Scale items.

Item #	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
PSS 24	.74	.07	.26	.10	.20	.43	-.004
PSS 20	.74	.07	-.002	.33	.20	.14	.17
PSS 22	.73	.17	.06	.22	.22	-.08	.05
CR 31	.76	.08	.16	.19	.07	.13	.06
SS 40	.71	.08	.12	.05	.04	.35	.35
SS 19	.68	.21	.28	-.003	.12	.20	.26
SS 25	.66	.18	-.06	.11	.28	.14	-.10
CR 26	.67	.32	.28	-.04	.15	.10	.18
CR 38	.63	.29	-.07	.35	.14	.24	.01
CR 3	.61	.16	.14	.32	.30	.13	.10
SS 37	.61	.07	.33	.22	-.01	.23	.30
PSS 27	.65	-.01	.14	.36	.21	.26	.17
CR 39	.54	.09	-.01	.09	.35	.002	.25
SS 17	.54	.04	.37	.23	.15	.11	.14
CR 35	.47	.25	.30	-.08	.23	.39	-.03
PHH 15	.47	.41	.34	.18	.14	-.06	-.02
MTB 14	.31	.82	.19	-.06	.08	.10	-.02
MTB 23	.20	.79	.08	.16	.06	.23	.09
CR 7	-.07	.63	.32	-.01	.19	.13	.41

Table 4.16.--Continued.

Item #	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
PHH 1	.11	.10	.78	.32	.34	.13	.09
PHH 16	.24	.20	.78	.01	.10	.19	.10
PHH 2	.31	.28	.47	.35	.18	-.07	.09
SS 11	.37	.08	.23	.64	-.06	.04	.23
SS 12	.31	.10	.24	.62	.14	.30	-.13
CR 8	.26	-.08	.14	.61	.38	.03	.24
CR 5	.38	.08	.12	.15	.69	.05	-.002
PHH 9	.25	.22	.09	-.01	.63	.01	.49
CR 36	.29	.21	.20	.11	.61	.21	-.10
CR 28	.30	.01	.15	.08	.14	.76	.15
MTB 29	.14	.43	.14	.21	-.01	.65	.004
MTB 33	.16	.47	.06	.06	.11	.63	.13
SS 6	.23	.28	.34	.34	-.07	.09	.57
SS 4	.52	.10	.16	.26	.16	.28	.51
SS 30	.55	.24	-.11	.32	.07	.21	.47

Note 1: Two items were omitted: CR 32 and CR 21.
Note 2: Percent variance for Factor 1 = 8.5, Factor 2 = 3.3, Factor 3 = 2.8, Factor 4 = 2.6, Factor 5 = 2.5, Factor 6 = 2.5, Factor 7 = 1.9.

Note 3: PHH = Personal Habits and Hygiene
SS = Social Skills and Social Support
CR = Coping Resources
MTB = Medication and Therapy Behavior
PSS = Positive Self-Statements

Table 4.17.--PHASE items[a] in a 7-factor varimax rotation solution.

Item No.	Item

Factor 1: General Post-Hospital Adjustment Self-Efficacy

PSS 24   Talk about your future hopes and plans in a positive way.

PSS 22   Think of yourself as being as good as other people.

PSS 20   Say encouraging things to yourself.

CR 31   Maintain a good energy level (one that is not too high or too low).

SS 40   Talk with others about your feelings when you feel down.

SS 19   Talk with someone when you are worried about something.

SS 25   Handle situations involving your family.

CR 26   Maintain concentration on a task as long as is needed.

CR 38   Handle your fears and anxieties.

CR 3   Find ways to work out "everyday problems."

SS 37   Do activities you enjoy on a regular basis.

PSS 27   Set realistic goals for yourself.

PHH 15   Eat a healthy, balanced diet every day.

CR 39   Keep yourself from having suicidal thoughts.

SS 17   Get your ideas across clearly to others.

CR 35   Keep yourself from behaving in ways that other people think are odd.

Factor 2: Following Rules

MTB 14   Keep all your appointments with your doctor (not miss appointments).

MTB 23   Meet with your outpatient case manager or therapist for all appointments.

CR 7   Stay out of trouble with the law.

Table 4.17.--Continued.

Item No.	Item

Factor 3: Self-Management

PHH 1   Wear clean clothes regularly.

PHH 16   Bathe/shower regularly.

PHH 2   Manage spending and saving money.

Factor 4: Interpersonal Coping

SS 11   Get involved in activities with other people.

SS 12   Get along well with other people.

CR 8   Handle the problems you were having before you came to the hospital.

Factor 5: Self-Control

PHH 9   Get at least 6 hours of sleep every night.

CR 5   Manage or ignore thoughts that bother you.

CR 36   Control your anger and temper.

Factor 6: Symptom Insight and Help-Seeking Behavior

CR 28   Notice if there are changes in your thoughts, feelings, or behavior that are beginning to give you trouble.

MTB 29   Help yourself to improve by working with your therapist.

MTB 33   Get in touch with your therapist or case manager if you think your thoughts are beginning to give you trouble.

Factor 7: Social Resources and Support

SS 6   Talk with at least one person every day.

SS 4   Ask for support from others when you need it.

SS 30   Keep a few close relationships going.

[a]Two omitted items were CR 32 (Keep from physically hurting yourself.) and CR 21 (Stay away from alcohol and street drugs.).

factor includes 16 to 18 items representing a <u>General</u> self-efficacy for post-hospital adjustment factor. Factor 2 appears to include three to six items reflecting an orientation to <u>Following Rules</u>. The third factor comprises three items involving <u>Self-Management</u> behaviors. The central theme of the fourth factor appears to represent aspects of <u>Interpersonal Coping</u>. The three items grouped under the fifth factor seem to reflect behaviors that might be labeled <u>Self-Control</u>. The sixth factor appears to be a combination of behaviors involving <u>Symptom Insight and Help-Seeking</u>. Factor seven seems to encompass behaviors that might represent the domain of <u>Social Resources and Support</u>.

The seven-factor solution did not account for a substantial portion of the total variance: 24.1%. As shown at the bottom of Table 4.16, factor 1 accounted for 8.5% of the total variance, with each of the remaining factors accounting for 3.3% or less of the variance.

Based on the results of the factor analysis, seven subscales were formed and a reliability analysis was performed. In addition, correlations among the seven subscales were computed based on the sum of subscale scores weighted by item loadings. The results of these analyses are given in Table 4.18. The General Self-Efficacy factor showed the highest measure of internal consistency (.95). Reliability estimates ranged from .72 to .95. Intercorrelations among the subscales ranged from .30 to .75, with the first factor demonstrating the highest correlations with the remaining factors.

Table 4.18.--Measures of internal consistency and factor correlation matrix.[a]

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Factor 1	(.95)	.49	.55	.67	.65	.55	.75
Factor 2		(.81)	.49	.30	.37	.54	.49
Factor 3			(.74)	.50	.37	.42	.50
Factor 4				(.74)	.49	.39	.63
Factor 5					(.72)	.36	.49
Factor 6						(.77)	.54
Factor 7							(.81)

[a]Coefficient alphas are presented on the diagonal. All p's < .001.

Correlations were generally too high to infer that each factor represents a separable dimension of post-hospital adjustment self-efficacy. The implications of these findings are discussed in the following chapter.

CHAPTER V

DISCUSSION

Chapter V summarizes and discusses the findings of the present study. Additionally, suggestions concerning the implications of this investigation for future research are offered.

Summary

To establish an instrument with the potential for use in future predictive research, it is necessary to obtain initial evidence of its reliability and validity. The major intention of this pilot investigation was to design an instrument that could reliably and validly assess the strength of psychiatric patients' self-efficacy about behaviors that pertain to successful adjustment to life in the community upon discharge from a psychiatric hospital. To accomplish this purpose, the Post-Hospital Adjustment Self-Efficacy (PHASE) Scale was developed and initial reliability and validity data were obtained. In particular, this study assessed relationships between perceptions of self-efficacy, as measured by the PHASE Scale, and a number of variables hypothesized to be related to post-hospital adjustment self-efficacy.

The PHASE Scale is a 36-item self-rating instrument developed on the basis of theoretical and empirical literature from three

major areas of research: (a) self-efficacy theory (Bandura, 1977, 1986), (b) applied research on the role of self-efficacy in processes of relapse and recovery (Coletti, Supnick, & Payne, 1985; Condiotte & Lichtenstein, 1981; DiClemente, 1981; McIntyre, Lichtenstein, & Mermelstein, 1983; O'Leary, 1985), and (c) psychiatric recidivism and recovery (Avison & Sheepley, 1987; Hooley, 1985; Kokes, Strauss, & Klorman, 1977; Lukoff, Snyder, Ventura, & Neuchterlein, 1984; Moos & Billings, 1982; Stoffelmayr, Dillavou, & Hunter, 1983; Subotnik & Neuchterlein, 1986).

The procedures used to develop the PHASE Scale involved generation of items based on the literature and clinical expertise, expert judging of the items for content and format, and informal piloting of the instrument before administration. Five subscales, representing five behavioral domains, comprised the total PHASE Scale: (a) Personal Habits and Hygiene, (b) Social Skills and Social Support, (c) Coping Responses, (d) Medication and Therapy Behavior, and (e) Positive Self-Statements.

Following the development of the PHASE Scale, a survey approach was used to gather information about post-hospital adjustment self-efficacy from a large number of psychiatric patients. A sample of 103 psychiatric inpatients about to be discharged from a psychiatric hospital completed the PHASE Scale and the Brief Symptom Inventory (BSI), a 53-item self-report measure of symptom distress. Responses to the BSI were used to evaluate construct validity of the PHASE Scale. Additional data on the number of previous psychiatric hospitalizations, symptoms of psychosis, diagnoses, length of

hospitalization, levels of adaptive functioning, admission status, and demographic variables were also obtained.

Seven hypotheses were developed and tested to explore the psychometric properties of the PHASE Scale and its relationships to other relevant variables. The results of the reliability and validity analyses were as follows:

1. The total PHASE Scale was demonstrated to be internally consistent, with a coefficient alpha of .96.

2. The alpha coefficients for the five subscales ranged from .71 to .96, demonstrating moderate to high internal consistency for the subscales.

3. The PHASE Scale appeared to be measuring a unidimensional construct. Significant correlations, ranging from .69 to .96, were observed between the total PHASE Scale and the five subscales.

4. Content validity for the PHASE Scale was inferred based on the plan and procedures of instrument construction, which were designed to include a representative collection of items and to incorporate the feedback of both expert judges and patients.

Data relevant to construct validation of the PHASE Scale were used to explore relationships between PHASE Scale scores and selected variables. The results of the construct validity analyses were as follows:

5. There were no significant differences in psychiatric patients' perceptions of post-hospital adjustment self-efficacy as a

function of age, gender, ethnicity, marital status, education, income, or length of current hospitalization.

6. No relationship was observed between a psychiatric patient's number of previous hospitalizations and his or her perception of post-hospital adjustment self-efficacy.

7. Psychiatric patients with psychotic symptoms during the current hospitalization reported significantly higher perceptions of post-hospital adjustment self-efficacy than patients who were non-psychotic during the current hospitalization.

8. No relationship was observed between psychiatric patients' perceptions of post-hospital adjustment self-efficacy and patients' levels of adaptive functioning either during the year before hospitalization or upon discharge.

9. A significant inverse relationship was observed between psychiatric patients' reported levels of symptom distress upon discharge and perceptions of self-efficacy.

Supplementary analyses were undertaken to explore (a) psychotic status as a moderator variable in relationships between self-efficacy and past performance and/or symptom distress levels, (b) the theoretical assumptions underlying the construct of self-efficacy in the context of psychiatric post-hospital adjustment, and (c) the internal structure of the PHASE Scale. The results of the supplementary analyses were as follows:

1. Psychotic status during the current hospitalization was observed to be an important moderator variable for symptom distress levels but not for selected past performance variables.

Specifically, while both psychotic and nonpsychotic subjects evidenced significant inverse relationships between PHASE scores and symptom distress levels, the relationship was much stronger for nonpsychotic than psychotic patients.

2. Variables assumed to reflect one theoretically postulated source of self-efficacy--past success or failure experiences--were observed to be more highly related to each other than to a variable assumed to reflect another theoretically distinct source of self-efficacy--internal arousal cues. These findings provide support for the theoretical position that the two sources of self-efficacy information are relatively distinct.

3. An empirical analysis of the internal structure of the PHASE Scale resulted in a 7-factor solution, accounting for only 24.1% of the total variance. One general factor, comprised of content from four of the five originally conceptualized behavioral components, accounted for about one-third of the explained variance. These findings suggest that a case may be made to treat post-hospital adjustment self-efficacy as a unidimensional construct rather than a combination of subcomponents, and that questions raised by the substantial portion of unexplained variance must be addressed.

Discussion of Results

This exploratory analysis of self-efficacy and psychiatric post-hospital adjustment addressed two major research questions:

(a) Can an internally consistent instrument to measure the self-efficacy beliefs of hospitalized psychiatric patients concerning post-hospital adjustment behaviors be constructed? and (b) Are certain characteristics of hospitalized psychiatric patients associated with their post-hospital adjustment self-efficacy beliefs?

The present results supported the following conclusions: First, the self-efficacy scale proved to be highly reliable, and it appeared to measure a unidimensional construct comprised of several aspects of post-hospital adjustment behaviors. Second, the initial investigation of construct validity for the scale, based on an analysis of relationships between self-efficacy expectations and hypothesized sources of self-efficacy information, produced mixed results. Some of the results may be interpreted in theoretically meaningful ways, and some raise important questions requiring further study. In addition, attention must be paid to this study's methodological limitations. These issues are discussed in the remainder of the chapter.

Average efficacy ratings were high ($\underline{M}$ = 108, $\underline{SD}$ = 25), indicating that subjects were relatively confident about performing the post-hospital adjustment behavioral tasks described in the PHASE Scale. The average rating of the subjects on each of the 36 tasks was 3.01, indicating they were "quite a bit" sure they would be able to perform the tasks. The fact that patients were about to be discharged from the hospital, signifying attainment of sufficient

recovery to return to daily living in the community, may have partially accounted for their relatively high confidence.

These results are consistent with the findings of DiClemente's (1981) self-efficacy research on smoking cessation and maintenance. On a 12-item measure of self-efficacy for smoking avoidance, DiClemente used a 7-point Likert scale and reported a mean self-efficacy rating of 71.5 (SD not available), with an item mean of 6. He suggested that successful abstention from smoking may have contributed to the overall high confidence of his subjects. It is noteworthy that, despite the restricted range of scores in his study, DiClemente found that efficacy expectations showed significant predictive superiority over past performance.

Reliability of the PHASE Scale

In Hypothesis 1, one type of reliability, that of internal consistency, was investigated for the PHASE Scale and the five subscales.

> Hypothesis 1: The internal consistency of the items on the PHASE Scale will be sufficiently high to infer homogeneity of the construct of self-efficacy in post-hospital adjustment.

A coefficient alpha of .96 for the PHASE Scale suggests that it is minimally affected by random measurement error, i.e., errors due either to the sampling of items or to chance situational factors (Nunnally, 1978). Therefore, it appears that the procedures for domain sampling and other test construction and administration methods used in this study may be considered adequate.

Coefficient alpha is also an index of homogeneity, estimating the proportion of test variance attributable to common factors among the items (Cronbach, 1951). The observed alpha level of .96 suggests a high degree of item consistency, indicating that the PHASE Scale may be interpreted as a measure of a unidimensional construct. The moderate to high significant correlations between the total PHASE Scale and the five subscales (.69 to .96) also provide evidence that the scale is measuring a unidimensional construct.

In a review of research on smoking abstinence self-efficacy, DiClemente (1986) reported that the various scales used have demonstrated high internal consistencies, with alpha coefficients of .95 or above. In further support of the cohesiveness of these scales, selected subsamples of scale items were found to have substantial correlations with the total scale scores. For example, in a study examining self-efficacy in the self-change of smoking behavior, DiClemente, Prochaska, and Gilbertini (1985) reported a coefficient alpha of .98 for the self-efficacy scale, and inter-item correlations ranging from .44 to .93, with an inter-item mean correlation of .69. Data from the present study are comparable to these findings: The alpha coefficient was .96 and inter-item correlations ranged from .31 to .77, with a mean of .61.

To increase reliability, it is usually recommended that the measure be lengthened in order to decrease measurement error due to inadequate sampling of item content. Although the PHASE Scale is not a very lengthy test, consisting of 36 items, the high internal

consistency of the measure suggests that interpretability may not be enhanced by lengthening the test. Instead, there may be advantages to reducing the number of items in future revisions of the instrument if redundancy of information is embedded in the current items. The fact that the estimate of alpha would not have been reduced by deletion of any one of the items suggests this may be the case. The discussion will return to this issue in the sections addressing the results of the factor analysis and implications for instrument revision.

Although all correlations between the total PHASE Scale and subscales as well as between subscales were significant, the Medication and Therapy Behaviors subscale was less strongly correlated with the others (.43 to .69). It may be that this subscale is measuring a more separable dimension of post-hospital adjustment self-efficacy than are the other subscales concerned with personal, social, and coping aspects of behavior.

Content Validity of the PHASE Scale

Hypothesis 2: The content of the items on the PHASE Scale will be indicative of self-efficacy in the context of post-hospital adjustment.

According to Nunnally (1978), one should ensure content validity by the plan and procedures of initial instrument construction. In Chapter III, the methods followed in this study to support content validity were presented. It seems reasonable to infer that the PHASE Scale has adequate content validity in that (a) the content domains were drawn from an extensive review of the

literature on post-hospital adjustment of psychiatric patients as well as clinical expertise; (b) a team of expert judges in the fields of psychiatric care and self-efficacy theory provided input into the processes of item construction and review; and (c) pilot testing of the instrument was conducted, and refinements were made based on the results.

Although efforts were made to ensure adequate domain sampling of content, it is important to keep in mind that it is much more difficult to identify appropriate target behaviors in some behavioral domains than in others. Psychiatric post-hospital adjustment behaviors constitute a much more complex composite of actions than, for example, behaviors relevant to more circumscribed phenomena such as snake phobias. Further investigation of the appropriateness and feasibility of improving the content validity of the initial PHASE Scale is clearly necessary. One weakness apparent to the investigator is that some of the items in the PHASE Scale may be too general to allow subjects to make adequate differentiations in their judgements. For example, "Control your anger and temper" or "Handle your fears and anxieties" may be too general for patients to respond accurately about their confidence to cope under conditions that would maximally challenge efficacy beliefs.

Relationships Between Self-Efficacy and Hypothesized Variables

One method of instrument construct validation involves investigating relationships between the measure of the construct of

interest and measures of variables with which the construct is expected to be related on the basis of theory. Hypotheses 3 through 7 were designed to provide information about the construct validity of the PHASE Scale based on an interpretation of self-efficacy theory and the empirical literature on psychiatric recidivism.

Self-efficacy theory maintains that performance experiences, or enactive attainments, provide the most influential source of efficacy information because they are based on actual mastery experiences (Bandura, 1986). Successful past performances tend to raise perceptions of self-efficacy in a given domain of behavior, and past failures are likely to lower self-efficacy in that domain. In this study, it was assumed that relevant past performance variables in the post-hospital adjustment of psychiatric patients would be represented by four variables: number of previous psychiatric hospitalizations, presence or absence of psychotic symptoms during the present hospitalization, and levels of adaptive functioning, both during the year before the current admission and upon discharge from the present hospitalization. The hypothesized relationships were as follows:

> Hypothesis 3: Number of previous psychiatric hospitalizations will be negatively related to total scores on the PHASE Scale, with patients who have had a greater number of previous hospitalizations tending to score lower than patients with fewer or no previous hospitalizations.

> Hypothesis 4: Psychotic symptoms during the current hospitalization will be negatively related to total scores on the PHASE Scale, with patients who were psychotic tending to score lower than patients who were nonpsychotic.

Hypothesis 5: Level of adaptive functioning during the year previous to this hospital admission will be positively related to total scores on the PHASE Scale, with patients who have had higher levels of adaptive functioning tending to score higher than patients with lower levels of adaptive functioning during the year prior to admission.

Hypothesis 6: Level of adaptive functioning upon discharge from the current hospitalization will be positively related to total scores on the PHASE Scale, with patients who have achieved higher levels tending to score higher than patients who have achieved lower levels of functioning.

The investigator expected to find small to moderate, significant relationships in the predicted directions. According to the theory, self-efficacy is not simply a reflection of past performance. Bandura (1986) contended that the cognitive appraisal of efficacy information is the key to understanding why there is no simple equivalence between past performance and percepts of self-efficacy. Depending on how people select, weight, and integrate efficacy information, the judgements formed may be faulty or accurate in terms of their actual capabilities.

In research with other populations and behavioral domains, some results have shown low to moderate, significant relationships between past performance variables and self-efficacy beliefs (DiClemente et al., 1985; Lent, Brown, & Larkin, 1984). Other findings have indicated a lack of association between past history variables and perceptions of self-efficacy. For example, DiClemente (1986) reported that number of cigarettes smoked, years of smoking, and problems quitting demonstrated small but significant correlations with smoking cessation self-efficacy, although number of previous attempts to quit was unrelated.

In Hypothesis 3, the assumption that greater numbers of previous hospitalizations would be viewed as past failures in post-hospital adjustment, and thus lower self-efficacy perceptions, was tested. The nonsignificant correlation observed (r = -.076, p < .223) indicated a failure to confirm Hypothesis 3, suggesting that patients' perceptions of post-hospital adjustment self-efficacy had little association with their past experience of psychiatric hospitalization. In Hypothesis 4, the assumption was made that experiencing psychotic symptoms during the current hospitalization would be viewed both as a salient failure event relative to community adjustment and an indication of problem severity, resulting in lowered self-efficacy perceptions. The results indicated that psychotic patients obtained higher mean self-efficacy scores than nonpsychotic patients, thus failing to confirm Hypothesis 4. Hypotheses 5 and 6 tested the assumptions that lower levels of adaptive functioning in the year before admission and upon discharge, respectively, would be viewed as poor mastery performance in life adjustment, and thus be associated with lower efficacy expectations. The evidence did not support these hypotheses (rs = .05, p < .303, and .06, p < .277, respectively).

From the perspective of self-efficacy theory, there are several plausible explanations for these findings. Bandura (1986) stated that the cognitive processing of self-efficacy involves two separable functions. The first involves the types of information people attend to and use as indicators of personal efficacy. The

second concerns the cognitive-appraisal rules people use in weighting and integrating efficacy information.

One possible reason for the lack of predicted relationships relates to the first concern. It may be that psychiatric patients did not attend to the selected variables as meaningful sources of enactive efficacy information, although they attended to other types of past performance indicators in assessing their post-hospital adjustment self-efficacy. This interpretation would imply faulty assumptions on the part of the investigator, but not disconfirming evidence for the construct. However, the fact that substantial evidence from recidivism studies (Avison & Sheepley, 1987) has indicated that previous hospitalizations, severity of symptoms, and social adjustment are useful predictors of rehospitalization makes it somewhat unlikely that these variables are not used as efficacy information.

Another possible reason for the lack of predicted relationships is that psychiatric patients' perceptions of self-efficacy are not very sensitive to the information conveyed by these indicants of past performance because of how they cognitively appraise the events. This interpretation relates to the second, cognitive appraisal, aspect of self-efficacy judgements. The theory maintains that a variety of personal, situational, and temporal factors will affect how people select, weight, and integrate efficacy information conveyed by past performance successes and failures. Bandura (1986) pointed out that some of the factors influencing how performance will be appraised include the ease or difficulty of the task, the

amount of effort expended, and the causal attributions one makes about his or her performance in light of these circumstances. The amount of external aid people receive and the rate and pattern of their successes and failures are also likely to affect how performance is interpreted. In addition, individuals' selective self-monitoring, by means of attentional and memory processes, plays a role in how self-efficacy judgements are formed.

It is reasonable to speculate that psychiatric inpatients' cognitive appraisal of post-hospital adjustment self-efficacy may be influenced by a number of these factors. For example, it is well known that symptoms associated with psychotic disorders typically include hallucinations or delusions, incoherent thinking, poor judgement, and loss of reality testing. Depressive disorders commonly involve symptoms of poor concentration and a debilitating sense of incapacity. While these cognitive dysfunctions are expected to be most intense during an acute episode of the disorder, it is possible that they also reflect elements of a more stable pattern of cognitive processing.

The idea that there are stable patterns of self-referent thinking that predispose depressive responses when the individual experiences salient stressors currently is a major subject of research in the field of cognitive structural assessment (Eaves & Rush, 1984; Guidano & Liotti, 1983; Hamilton & Abramson, 1983). For example, the main finding in a recent study by Dobson and Shaw (1986) was that some aspects of cognition related to depression

remain stable as depression remits. The current focus of this body of research concerns the question of stable versus unstable cognitive patterns as assessed by various measures designed to tap dysfunctional attitudes, causal attributions, automatic thoughts, and hopelessness. Neuchterlein and Dawson (1984) reported evidence that several deficits on information-processing and attentional tasks showed great similarity across populations at heightened risk for schizophrenic disorder, actively symptomatic schizophrenic patients, and nonpsychotic, relatively remitted schizophrenic patients. Harrow, Marengo, and McDonald (1986) also provided evidence that, at least for a subgroup of schizophrenics, residual signs of thought disorder remained a persistent characteristic at follow-up 1-1/2 years after the index hospitalization.

Therefore, it seems plausible that psychiatric patients' evaluation of past performance as a source of information for forming their perceptions of post-hospital adjustment self-efficacy may be inaccurate because of distortions in cognitive appraisal processes. For example, if self-monitoring is impaired, patients may not attend to or recall the earlier failures in performing tasks related to remaining out of the hospital, especially if there are long periods of time between hospitalizations. The fact that 60% of the patients in this sample had not been hospitalized in the entire year before the current admission suggests the possibility that temporal disparity also may have mitigated the appraisal of self-efficacy. Another possibility is that patients may have made causal attributions for their previous hospitalizations, psychosis, or

adaptive functioning of an external, global, and/or unstable nature. In other words, patients may have attributed their past failures to remain out of the hospital to reasons over which they thought they had no control, and consequently did not weigh this information in formulating their self-efficacy beliefs. Finally, it is possible that patients' reality testing may have simply been impaired, causing a misjudgement of their capabilities to perform the tasks contained on the PHASE Scale.

The findings relative to Hypothesis 4 may be interpreted as further support for the possibility that distortions in cognitive appraisal may have affected the judgements of self-efficacy in this sample. Specifically, the significantly higher mean self-efficacy score obtained by psychotic patients compared to nonpsychotic patients suggests that psychotic patients were more confident about their capabilities to perform the post-hospital adjustment tasks on the PHASE Scale. It is difficult to find rational explanations for this phenomenon. In clinical practice as well as in the research literature, it is widely held that the experience of psychosis indicates the occurrence of a more serious psychological disturbance than when such symptoms are not present. Similarly, the course of recovery seems to be more difficult and the risk of rehospitalization appears to be higher, at least for psychosis associated with disorders that tend to follow an episodic pattern such as schizophrenia (Engelhardt et al., 1982; Hibberd & Trimboli, 1982). Thus, the task of successful adjustment to life in the

community after discharge is likely to be more difficult, in general, for patients who have been psychotic than for patients who have not.

The most likely explanation for the finding that psychotic patients reported higher average self-efficacy is that psychotic patients were demonstrating what Bandura (1986) referred to as "faulty self-knowledge." Whether due to residual impaired reality testing, use of the denial defense mechanism, or deficits in attentional or memory processes, patients who were psychotic during the current admission may have misjudged their self-efficacy due to distortions in the self-appraisal process. The distortions may have occurred at the level of perception, during cognitive processing, or during recall of efficacy-relevant experiences.

Other findings tend to reinforce the view that patients in this sample may have been influenced by faulty self-knowledge in formulating their self-efficacy perceptions. First, a significant inverse relationship was observed between psychotic symptoms and voluntary admission status (r = -.44), suggesting that, despite experiencing more serious dysfunction than nonpsychotic patients, psychotic patients were less likely to admit themselves voluntarily to the mental health facility. Again, this may be viewed as an indication of faulty self-knowledge. Moreover, patients who were admitted involuntarily reported higher self-efficacy (M = 112, SD = 26) than those who were admitted voluntarily (M = 102, SD = 24), t(101) = -1.91, p < .06, further suggesting that impaired reasoning may affect self-efficacy judgements in this population.

Thus far, the discussion has focused on plausible explanations for the failure to confirm the hypothesized relationships between past performance variables and PHASE Scale scores. The investigator also sought to obtain evidence for the construct validity of the PHASE Scale by investigating its relationship to another source of self-efficacy information postulated by the theory: internal arousal cues.

Self-efficacy theory (Bandura, 1986) maintains that people rely partly on information from their internal arousal experiences in formulating their perceptions of self-efficacy. When people become aware of unpleasant emotional arousal, they are likely to doubt their behavioral competence and to lower their self-efficacy expectations. The influence of internal arousal extends beyond autonomic arousal to other indicants, depending on the activities in question. For example, in activities involving cardiac recovery, people are likely to formulate their perceptions of cardiac capability partly from inferences about their experience of symptoms of fatigue, shortness of breath, or pain (Taylor, Bandura, Ewart, Miller, & DeBusk, 1985). In this study, it was assumed that relevant internal arousal cues, represented by severity of psychological symptom distress, would relate to self-efficacy. The hypothesized relationship was as follows:

> Hypothesis 7: Level of symptom distress at time of discharge will be negatively related to total scores on the PHASE Scale, with patients reporting higher levels of symptom distress tending to score lower on the PHASE Scale than patients with lower levels of symptom distress.

The test of Hypothesis 7 resulted in a moderate, significant correlation in the expected direction (r = -.51), confirming the hypothesis and providing some support for the construct validity of the PHASE Scale. This evidence is consistent with the theoretical position that lower levels of internal arousal tend to be associated with higher perceptions of self-efficacy, whereas higher levels of arousal tend to be associated with lower self-efficacy. It appears that patients in this sample may have differentially appraised their post-hospital adjustment self-efficacy based on the degree of symptom distress they experienced shortly before discharge from the hospital. A plausible theoretical explanation would be that patients with higher levels of symptom distress may have read their arousal as an ominous sign of vulnerability to dysfunction, perhaps providing reason to doubt their capability to handle post-hospital adjustment tasks.

Several issues requiring further investigation arise from the significant relationship found between subjects' ratings of psychiatric symptom distress and perceptions of post-hospital adjustment self-efficacy. For example, psychotic patients in this sample tended to report lower severity of symptom distress at discharge than did nonpsychotic patients (r = -.26, p < .005). This finding raises questions along the same lines as those discussed earlier in relation to the cognitive appraisal of past performance efficacy information. Specifically, one questions whether psychotic patients actually experienced less severe symptoms, or whether their

lower self-report of symptoms reflects distortions in cognitive appraisal of symptoms due to, for example, faulty self-knowledge.

As Bandura (1986) pointed out, a number of personal factors, including different personal interpretations of internal arousal cues, will have differential effect on perceived self-efficacy. In the psychiatric inpatient population, one might speculate that self-efficacy judgments derived, in part, from internal arousal cues may be moderated by personal interpretations of the degree of symptom reduction between hospital admission and discharge. Patients with more severe symptomatology upon admission, for example, may attach greater weight to the alleviation of symptoms than patients with less severe symptomatology in formulating self-efficacy judgments.

Salient situational factors may also influence how internal arousal cues are judged or reported. For example, involuntary psychotic patients may harbor suspicions that acknowledgment of psychiatric symptoms would delay discharge from the hospital. Finally, effects induced by various medications should be examined to learn how they may influence the self-appraisal of internal arousal cues. These and other issues raise important questions to be addressed in future research.

Supplementary Analyses

Psychotic status as a moderator variable. The results of the correlational analyses between PHASE Scale scores and past performance variables for psychotic versus nonpsychotic subjects indicated that psychotic status was not a significant moderator

variable in this sample. Neither psychotic nor nonpsychotic patients demonstrated the predicted association between higher self-efficacy and relatively successful past performance experiences or lower self-efficacy and poorer past performance accomplishments.

One might interpret these findings as supportive of the earlier suggestion that, on the whole, psychiatric inpatients did not attend to the selected variables as meaningful sources of enactive efficacy information, although they could have attended to other types of past performance indicators in assessing their post-hospital adjustment self-efficacy.

An alternative interpretation might follow the lines of the previous discussion concerning the possibility that psychiatric inpatients' judgements of self-efficacy were inaccurate because of distortions in the cognitive appraisal of mastery experiences. The results of the moderator analysis suggest that impaired reality testing, denial, faulty self-monitoring, deficits in attentional or memory processes, or some other factor resulting in "faulty self-knowledge" might mediate the appraisal of enactive efficacy information among nonpsychotic as well as psychotic inpatients.

The other major finding of the moderator analysis of psychotic status was that while both psychotic and nonpsychotic subjects evidenced significant relationships between PHASE scores and symptom distress levels in expected directions, the relationship was much stronger for nonpsychotic (r = -.82) than psychotic (r = -.21) subjects. This pattern suggests that psychotic status might be an important moderator variable in the cognitive appraisal of internal

arousal cues as a source of post-hospital adjustment self-efficacy. Specifically, it is possible that nonpsychotic patients view themselves more realistically in attending to and weighting symptom distress information than do psychotic patients.

Collectively, the results of this supplementary analysis reinforce the disconfirming evidence of a relationship between past performance variables and self-efficacy and the supporting evidence of a relationship between self-efficacy and internal arousal cues among psychiatric inpatients. These findings may suggest that internal arousal cues are a more influential source of self-efficacy information than are past performance variables for the population of psychiatric inpatients. One could speculate, for example, that temporal disparities between past performance experiences and ratings of post-hospital adjustment self-efficacy at discharge from the current hospitalization result in low salience of past performance information for this population. Internal arousal cues, on the other hand, are quite proximal experiences, and patients might have attached considerable importance to this source of efficacy information in formulating their perceptions of self-efficacy. These questions suggest the need for further research with other samples to investigate both the types of information psychiatric patients attend to in formulating self-efficacy perceptions and the factors affecting their cognitive appraisal of such information.

Intercorrelations among hypothesized variables. The results of the intercorrelations among variables hypothesized to be associated with post-hospital adjustment self-efficacy may be interpreted as evidence in support of self-efficacy theory. Specifically, variables selected to measure one theoretically postulated source of self-efficacy information--past mastery experience--were observed to be more highly related to each other than to a variable assumed to reflect another theoretically distinct source of self-efficacy information--internal arousal cues. This evidence supports the theoretical position that the two sources of self-efficacy information are relatively distinct from one another. The one contradictory finding from this analysis was the significant, positive relationship between psychotic symptoms and reported severity of symptom distress. Possible explanations for this finding were discussed in connection with Hypothesis 7 in the last section.

In this sample, poor past performance in one area tended to be associated with poor past performance in other mastery areas. Specifically, past recidivism, psychotic symptoms, and lower levels of adaptive functioning during the past year and upon discharge tended to co-vary with each other, as well as with involuntary admission status. The fact that these efficacy-relevant aspects of performance were not, in turn, associated with lower ratings of self-efficacy again raises the question of whether distortions in cognitive appraisal or some other intervening variable(s) might have mediated subjects' judgments of self-efficacy.

Factor analysis. The results of the factor analysis of the PHASE Scale did not provide clear support for the five-factor structure conceptualized in constructing the scale. Empirically, one General Factor accounted for about one-third of the variance explained by the scale. The predominant component consisted of items from four of the five originally conceptualized behavioral dimensions: Positive Self-Statements, Coping Resources, Social Skills and Social Support, and Personal Habits and Hygiene. The other six factors that emerged from the empirical analysis were generally weaker, consisting of few items with strong, unique factor loadings, and accounting for very small proportions of the explained variance. In addition, the correlations among the seven factors were too high to infer that each reflected a separable dimension of psychiatric post-hospital adjustment self-efficacy. These findings support the notion of a general self-efficacy for post-hospital adjustment factor, rather than several separate subcomponents.

The original 36-item PHASE Scale does not appear to have greater internal consistency than a scale consisting of only the 16 items loading on the General Factor (Cronbach alpha = .95), nor does the longer and broader PHASE Scale appear to yield clearly identifiable subcomponents that account for much of the explained variance in post-hospital adjustment self-efficacy. However, a longer scale may have the advantage of providing more useful information about a particular individual's weaknesses or strengths

if an ipsative rather than a normative type of item analysis is employed.

Finally, it is interesting how the results of the factor analysis in this study compare to those reported by DiClemente (1986) in a review of self-efficacy research in the domain of addictive behaviors. Principal-components analysis of the self-efficacy scales in regard to smoking abstinence generally yielded a powerful first component that was responsible for most of the variance accounted for by the scales. A clear case for the existence of identifiable subcomponents has not emerged; at this point, the evidence appears to favor the idea of a general self-efficacy for nonsmoking. However, this view is based on the finding of numerous multiple loadings of items on a number of factors. In the present study, multiple loadings did not occur with great frequency.

The other major difference between the findings of the present study and those of nonsmoking self-efficacy is in the amount of variance explained by the scales. For example, DiClemente et al. (1985) reported 82% of the total variance accounted for by a 31-item smoking-cessation self-efficacy scale. In this study, only 24.1% of the total variance was accounted for by the PHASE Scale.

Limitations of the Study

PHASE Variance

The fact that approximately 76% of the PHASE Scale's total variance was unexplained is a major limitation of this study.

Several plausible explanations should be considered in addressing this issue. For example, the differences in the amount of variance explained by the smoking self-efficacy scale and the PHASE Scale might have been due to differences in the subject populations and type of behavioral domain assessed. The smoking-cessation and maintenance scales were designed to assess perceived capabilities to abstain from smoking in a variety of specific situations. Subjects were "normal" individuals who were engaged in either the process of quitting or maintaining abstinence of cigarette smoking. It is plausible that smoking-abstinence self-efficacy judgments of a normal sample of subjects could have been more homogeneous and narrower in focus than the self-efficacy perceptions of a sample of psychiatric patients, with quite varied diagnoses, concerning a broader range of behavioral tasks relevant to post-hospital adjustment. If this speculation were valid, a larger sampling error for the PHASE Scale may have occurred, due to the relatively heterogeneous nature of the sample and the item pool.

A related possible source of unexplained variation could have been an inadequate sample of appropriate items on the PHASE Scale. In Chapter II, some of the conceptual and methodological difficulties in applying self-efficacy theory to complex domains of behavior and new clinical populations noted by Colletti et al. (1985) were highlighted. One important issue cited by these authors was the choice of target behaviors in constructing self-efficacy measures. In this initial attempt to assess self-efficacy in a behavioral domain of a (potentially) multidimensional nature, some

relevant situations and coping responses may have been omitted or inadequately addressed in constructing the PHASE Scale. Further research with additional items and other, larger samples is necessary to clarify the adequacy of item-domain sampling.

Another possible source of response variability within the PHASE Scale may have been due to the conditions of administration. As described in Chapter III, efforts were made to ensure that patients were given uniform explanations and instructions for participation in the study. However, since patients were approached individually by a staff member before discharge from the hospital, the investigator did not have direct control over the uniformity of administrative procedures. Moreover, some subjects may have experienced environmental distractions or time pressure in completing the PHASE Scale on the hospital unit. In addition, a patient's motivation to complete the instrument carefully may have been influenced in part by the administrator's presentation of the research project and instructions. Some patients, particularly any with residual paranoid ideation, may also have felt a need to censor their responses, since they were asked to return the completed measures to a staff member. The fact that some subjects were on psychotropic medications may also have affected response style. Furthermore, one must be concerned about the possibility that some subjects may have responded to the PHASE Scale with carelessness or confusion, another contingent variable that may have introduced random error variance.

Although these considerations are not inclusive of all of the possibilities of error variance, it may be that one or a combination of them accounted for a portion of the unexplained variance of the PHASE Scale in this study. Further research is needed to explore whether additional variance could be explained by systematic control of these and other possible sources of error, such as potentially greater confusion or carelessness among psychotic patients than nonpsychotic patients.

Psychometric Properties of Patient Functioning Variables

The assessment of the validity of the PHASE Scale might have been limited due to psychometric problems with the past performance or internal arousal measures. For example, the accuracy of staff ratings of peak adaptive functioning during the year prior to admission (GAS scores) was not subjected to tests of inter-rater reliability. If staff were not consistent in their ratings of patients, this measure could have been unreliable. Moreover, GAS scores might be considered too global in nature to support meaningful differentiations about individuals' past performance experiences. It is likely that measures with multiple ratings reflecting specific areas of past performance, such as social, vocational, and emotional functioning, would have provided more accurate information on prior adaptive functioning. One of the premorbid adjustment scales reviewed in Chapter II, such as the Prognostic Scale (Strauss & Carpenter, 1974), might be considered for inclusion in future research.

Confounding Variables

Another set of limitations of this study stems from potential weaknesses of the design. In this exploratory correlational study, neither experimental manipulation nor random assignment was used by the investigator. Without the benefit of these methods of maximizing control of independent variables, one must be concerned with possible alternative hypotheses derived from extraneous variables that may have influenced the results of the study. Some of the instrumentation effects discussed above may have introduced one source of confounding variables that may have, in turn, contributed in part to the results.

A second source of alternative explanations for some of the present findings lies in the sampling procedures. The sample consisted of 103 psychiatric patients who volunteered to participate out of a pool of 300 patients who were hospitalized on the unit during the time of the study. It is possible that the self-selection of sample volunteers resulted in a subject sample that possessed some characteristics that may have biased their responses to the PHASE Scale compared to how nonparticipants would have responded. For example, patients who agreed to participate may have been relatively prone to deny their doubts about returning to the community. Likewise, lack of willingness to participate may have been due to any number of factors, such as illiteracy, fear of self-disclosure, or apathy.

An examination of the demographic and clinical information obtained on participants suggests that the sample was generally varied and that patients were fairly heterogeneous. The high percentages of psychotic, involuntary, single, and well-educated patients in this sample may or may not be an indication of poor sampling procedures. The investigator was unable to find sufficiently detailed data descriptive of psychiatric inpatient populations in the literature with which to compare data for the sample in this study. Data on the demographic and clinical characteristics of the nonsampled inpatients on the unit were not compiled, so it was not possible to compare sampled and nonsampled groups. Thus, it is not clear whether lack of population representativeness was a threat to internal or external validity in this study. Although there is no apparent reason to suspect that the sample was nonrepresentative of hospitalized psychiatric patients, further research with other, larger samples is necessary to clarify this issue.

A third source of alternative explanations derives from the set of potentially important mediating variables unaccounted for in this study. For example, this study did not attempt to assess two of the four key sources of self-efficacy information postulated by the theory: vicarious efficacy information and persuasory efficacy information (Bandura, 1986). In addition, important past performance variables may have been overlooked, and factors such as task difficulty, causal attributions about past performance,

accuracy of self-knowledge, and other personal, situational, and temporal variables were not explored.

External Validity

The exploratory nature of this study implies the need for great caution in generalizing from the results. Some of the factors limiting external validity are implicit from the above discussion. For example, the results of this study may be specific to psychiatric patients at a certain level of psychological recovery or cognitive functioning, or who possess other particular attributes characteristic of the participants in this study. Moreover, it may be inappropriate to expect the results to apply to psychiatric patients with different demographic profiles, for example, married patients, those with lower levels of education, or patients with different diagnoses from those of the patients in this sample.

Perhaps the most significant external validity limitations result from the fact that the results were based on a single sample of the population from only one psychiatric hospital unit in one geographic area during a single 10-month interval. Findings based on samples drawn during another time period or from different psychiatric inpatient facilities may conceivably differ from the present findings. At this point, further research with additional samples is needed to clarify the generalizability of these findings.

Implications for Research

There appear to be four general questions that merit further study in the area of post-hospital adjustment self-efficacy:

1. Do post-hospital adjustment self-efficacy beliefs predict outcome, and how might certain mediating variables affect this relationship?

2. What factors mediate the judgemental process of forming self-efficacy perceptions concerning psychiatric post-hospital adjustment?

3. What types of information do people attend to in formulating their psychiatric post-hospital adjustment self-efficacy?

4. What are the behaviors that are most important in determining psychiatric post-hospital adjustment and that should be included in the measurement of self-efficacy?

The ideas for future research directions presented below suggest some possibilities for addressing these questions, although they are not intended to be exhaustive.

The first recommendation that follows from the present research is that follow-up data on behavioral outcomes be obtained on subjects in this sample to investigate the predictive validity of the PHASE Scale. The question of how psychiatric patients' ratings of their self-efficacy are associated with their actual ability to remain in the community is a key issue. Analysis of the predictive power of self-efficacy beliefs relative to past performance variables and internal arousal cues would also provide important evidence concerning the validity of self-efficacy theory in this context. In addition, it would be valuable to ascertain the behavioral antecedents of rehospitalization for those patients who

were rehospitalized during the follow-up period in order to provide additional clues about the precipitants of relapse that might be incorporated into future revisions of the PHASE Scale. For example, through semi-structured interview techniques, information on the specific types of behaviors and situations that patients find problematic and the degree of difficulty for different types of tasks could be obtained.

Future research with other samples could parallel the present investigation but should include attempts to assess other potentially mediating variables not explored in this study. For example, efforts to incorporate measures of the two other postulated sources of self-efficacy information, causal attributions, and other factors potentially affecting the cognitive appraisal of self-efficacy information should be implemented. The issue of the role of cognitive distortions, particularly in psychotic patients compared to nonpsychotic patients, appears to be crucial in this population. The Minnesota Multiphasic Personality Inventory (MMPI) might be useful in this regard as a measure of denial, paranoia, or thought disorder. Consideration might also be given to use of one or both of two subtests of the Wechsler Adult Intelligence Scale-- Revised (WAIS-R) as possible measures of cognitive distortion. The Comprehension subscale, for example, is viewed as a good measure of common sense and the ability to use facts in a pertinent, meaningful, and emotionally relevant manner; the Similarities subtest is considered to be a good measure of logical thinking. Administration of the MMPI and other concurrent measures to assess

reality testing capacities and/or deficits in attentional or memory processes would help to address the issue of the relationship between self-efficacy and corresponding levels of cognitive functioning.

The findings of this study suggest that future research with new samples should make every effort to maximize systematic variance by defining sample characteristics as clearly as possible, particularly in terms of clinical and history variables. Greater detail and objectivity in specification of diagnoses, psychotic and nonpsychotic symptomatology, and levels of adaptive functioning, for example, would permit delineation of more homogeneous sample groups, which, in turn, would increase the power of statistical tests.

In light of the present findings that internal arousal cues may be more influential in psychiatric inpatients' judgements of post-hospital adjustment self-efficacy than past performance information, it is also recommended that future investigations explore the question of the _types_ of information psychiatric patients attend to in formulating their self-efficacy beliefs concerning post-hospital adjustment. This might be accomplished by conducting semi-structured interviews with patients after they have completed the self-efficacy scale. Investigation of how relevant types of efficacy information might differ on the basis of diagnosis, symptom severity and reduction, length of time since the last hospitalization, or other past performance variables would also be beneficial.

Consideration should also be given to conducting an experimental treatment designed to enhance the post-hospital adjustment self-efficacy of psychiatric patients. For example, one such study could focus on whether self-efficacy can be increased by cognitive or behavioral modes of treatment and how improvements in perceptions of self-efficacy from pretreatment to posttreatment predict follow-up recidivism. Such experimental manipulations need to be thoroughly assessed in order to evaluate the potential therapeutic applications of self-efficacy theory in this population.

The findings of the present research also imply a number of possible directions for further instrument revision. For example, to address the concern that psychiatric patients may distort self-report ratings of their beliefs in their capabilities, it may be useful to incorporate items to detect a deliberate attempt on the part of the subject to present him- or herself in a favorable light. The "L" Scale of the MMPI might provide a useful model in this regard.

The results of the factor analysis suggest that there may be a general self-efficacy for post-hospital adjustment factor, although six other weaker factors also emerged. In these early stages of exploration, it may be beneficial to devote further research to developing additional items in each of the content areas suggested by the weaker factors. This avenue of research could help clarify whether these factors might supply distinct information about specific aspects of post-hospital adjustment self-efficacy not included in the general self-efficacy factor.

In a similar vein, it might be advantageous to attempt to revise or add items that are less generally worded than many of the items in the present PHASE Scale. More specific item content may be helpful in facilitating subjects' ability to make adequate differentiations about their confidence to perform tasks of varying degrees of difficulty under a variety of conditions and situations. Again, procedures that incorporate semi-structured interview techniques to ask psychiatric patients and significant others about the tasks and situations they encounter in attempting to remain out of the hospital may be very useful in this regard.
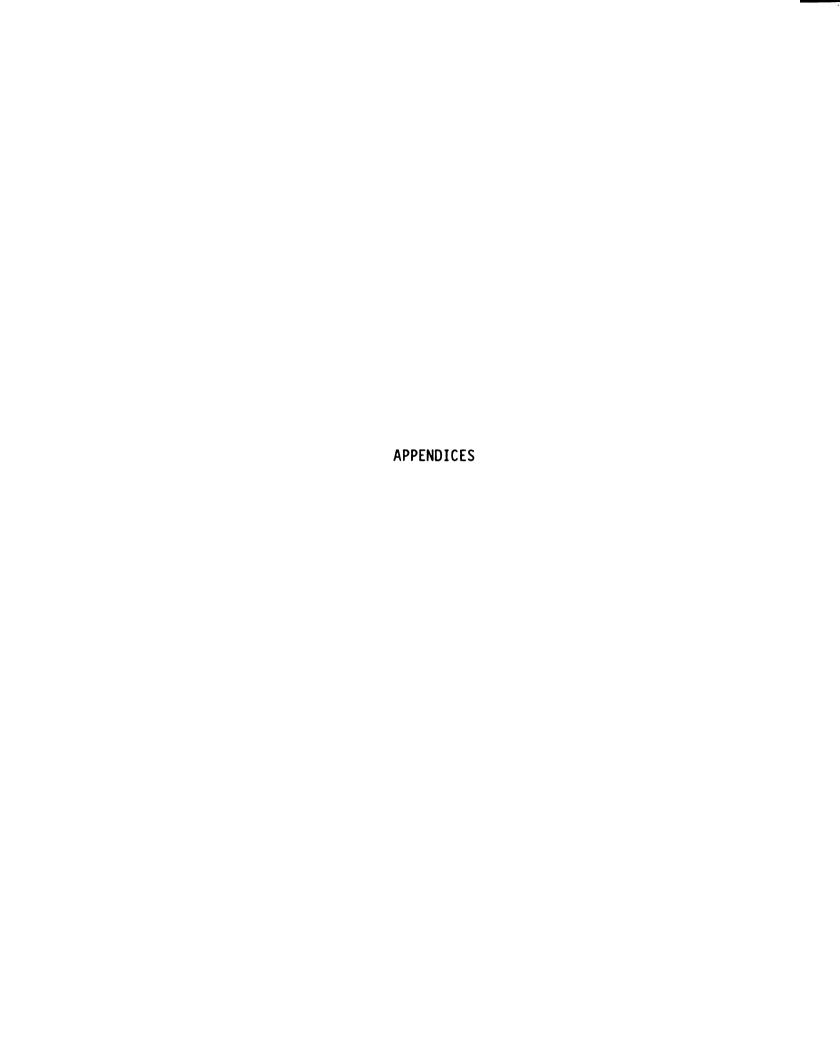
A final interesting line of inquiry to be suggested concerns the potential clinical uses of the PHASE Scale. Although clinical applications should await further evidence in support of the construct and predictive validity of the scale, some ideas seem worthy of investigation at this stage. For example, the PHASE Scale might be considered for use in the identification of patients at high risk for relapse. For this purpose, a scale that provides the desired information with fewer items while not sacrificing accuracy would maximize efficiency. Given the high internal consistency of the items loading on the predominant General Factor, it is likely that a revised PHASE Scale comprised of those 16 items would be sufficient for this use.

On the other hand, the longer 36-item PHASE Scale (or a revised version incorporating greater specificity and difficulty of tasks) may better serve clinical purposes of an ipsative nature. Changes

in patients' self-efficacy due to current treatment modalities could be monitored through periodic administration of the scale. In addition, assessment of individual patients' strengths and weaknesses might be facilitated by use of the scale as part of an evaluation of patients' particular vulnerabilities to dysfunction in discharge planning.

The PHASE Scale could also provide a basis for designing interventions aimed at enhancing the self-efficacy of psychiatric patients concerning post-hospital adjustment behavioral tasks. For example, didactic or group learning experiences could be structured to provide patients with opportunities to practice performance of tasks they feel inefficacious to accomplish successfully. Changes in PHASE Scale scores could then be used to monitor patient progress and provide feedback to both patients and caregivers.

Although the ideas presented here do not encompass all of the possible avenues of future research, it is hoped that they will serve as a catalyst for future efforts to explore the complex phenomenon of post-hospital adjustment self-efficacy.

APPENDICES

APPENDIX A

POST-HOSPITAL ADJUSTMENT SELF-EFFICACY SCALE

Patient No._____

Date_____

Part I. PHASE

Instructions: This questionnaire asks about some things that people often face after they leave the hospital. Please read each item carefully and then say how sure you are that you could do each task. Give your answer by circling the number that best describes how sure — or not sure — you are that you can do each task.

How sure are you that you could:	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	COMPLETELY SURE
1. Wear clean clothes regularly.	0	1	2	3	4
2. Manage spending and saving money.	0	1	2	3	4
3. Find ways to work out "everyday problems".	0	1	2	3	4
4. Ask for support from others when you need it.	0	1	2	3	4
5. Manage or ignore thoughts that bother you.	0	1	2	3	4
6. Talk with at least one person every day.	0	1	2	3	4
7. Stay out of trouble with the law.	0	1	2	3	4
8. Handle the problems you were having before you came to the hospital.	0	1	2	3	4
9. Get at least 6 hours of sleep every night.	0	1	2	3	4
10. Go to day treatment, work, or school when you are supposed to. (Leave this item blank if this is not part of your current plans.)	0	1	2	3	4
11. Get involved in activities with other people.	0	1	2	3	4
12. Get along well with other people.	0	1	2	3	4
13. Change or stop your medication only with your doctor's agreement. (Leave this item blank if you are not currently on medication.)	0	1	2	3	4
14. Keep all your appointments with your doctor (not miss appointments).	0	1	2	3	4

How sure are you that you could:

		NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	COMPLETELY SURE
15.	Eat a healthy, balanced diet every day.	0	1	2	3	4
16.	Bathe/shower regularly.	0	1	2	3	4
17.	Get your ideas across clearly to others.	0	1	2	3	4
18.	Stay in a job, day program, or school for 1 year or longer. (Leave blank if this isn't part of your current plans.)	0	1	2	3	4
19.	Talk with someone when you are worried about something.	0	1	2	3	4
20.	Say encouraging things to yourself.	0	1	2	3	4
21.	Stay away from alcohol and street drugs.	0	1	2	3	4
22.	Think of yourself as being as good as other people.	0	1	2	3	4
23.	Meet with your outpatient case manager or therapist for all appointments.	0	1	2	3	4
24.	Talk about your future hopes and plans in a positive way.	0	1	2	3	4
25.	Handle situations involving your family.	0	1	2	3	4
26.	Maintain concentration on a task as long as is needed.	0	1	2	3	4
27.	Set realistic goals for yourself.	0	1	2	3	4
28.	Notice if there are changes in your thoughts, feelings, or behavior that are beginning to give you trouble.	0	1	2	3	4
29.	Help yourself to improve by working with your therapist.	0	1	2	3	4
30.	Keep a few close relationships going.	0	1	2	3	4
31.	Maintain a good energy level (one that is not too high or too low.)	0	1	2	3	4
32.	Keep from physically hurting yourself.	0	1	2	3	4
33.	Get in touch with your therapist or case manager if you think your thoughts are beginning to give you trouble.	0	1	2	3	4

How sure are you that you could:	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	COMPLETELY SURE
34. Take your medication when you are supposed to. (Leave this item blank if you are not currently on medication.)	0	1	2	3	4
35. Keep yourself from behaving in ways that other people think are odd.	0	1	2	3	4
36. Control your anger and temper.	0	1	2	3	4
37. Do activities you enjoy on a regular basis.	0	1	2	3	4
38. Handle your fears and anxieties.	0	1	2	3	4
39. Keep yourself from having suicidal thoughts.	0	1	2	3	4
40. Talk with others about your feelings when you feel down.	0	1	2	3	4

APPENDIX B

GLOBAL ASSESSMENT SCALE

Global Assessment Scale (GAS)

Robert L. Spitzer, M.D., Miriam Gibbon, M.S.W., Jean Endicott, Ph. D.

Rate the subject's lowest level of functioning in the last week by selecting the lowest range which describes his functioning on a hypothetical continuum of mental health-illness. For example, a subject whose "behavior is considerably influenced by delusions" (range 21-30), should be given a rating in that range even though he has "major impairment in several areas" (range 31-40). Use intermediary levels when appropriate (e.g., 35, 58, 62). Rate actual functioning independent of whether or not subject is receiving and may be helped by medication or some other form of treatment.

Name of Patient _____ ID No. _____ Group Code _____

Admission Date _____ Date of Rating _____ Rater _____

GAS Rating: _____

100 | 91	Superior functioning in a wide range of activities, life's problems never seem to get out of hand, is sought out by others because of his warmth and integrity. No Symptoms.
90 | 81	Good functioning in all areas, many interests, socially effective, generally satisfied with life. There may or may not be transient symptoms and "everyday" worries that only occasionally get out of hand.
80 | 71	No more than slight impairment in functioning, varying degrees of "everyday" worries and problems that sometimes get out of hand. Minimal symptoms may or may not be present.
70 | 61	Some mild symptoms (e.g., depressive mood and mild insomnia) OR some difficulty in several areas of functioning, but generally functioning pretty well, has some meaningful interpersonal relationships and most untrained people would not consider him "sick."
60 | 51	Moderate symptoms OR generally functioning with some difficulty (e.g., few friends and flat affect, depressed mood and pathological self-doubt, euphoric mood and pressure of speech, moderately severe antisocial behavior).
50 | 41	Any serious symptomatology or impairment in functioning that most clinicians would think obviously requires treatment or attention (e.g., suicidal preoccupation or gesture, severe obsessional rituals, frequent anxiety attacks, serious antisocial behavior, compulsive drinking, mild but definite manic syndrome).
40 | 31	Major impairment in several areas, such as work, family relations, judgment, thinking or mood (e.g., depressed woman avoids friends, neglects family, unable to do housework), OR some impairment in reality testing or communication (e.g., speech is at times obscure, illogical or irrelevant), OR single suicide attempt.
30 | 21	Unable to function in almost all areas (e.g., stays in bed all day) OR behavior is considerably influenced by either delusions or hallucinations OR serious impairment in communication (e.g., sometimes incoherent or unresponsive)or judgment (e.g., acts grossly inappropriately).
20 | 11	Needs some supervision to prevent hurting self or others, or to maintain minimal personal hygiene (e.g., repeated suicide attempts, frequently violent, manic excitement, smears feces), OR gross impairment in communication (e.g., largely incoherent or mute).
10 | 1	Needs constant supervision for several days to prevent hurting self or others (e.g., requires an intensive care unit with special observation by staff), makes no attempt to maintain minimal personal hygiene, or serious suicide act with clear intent and expectation of death.

APPENDIX C

RESEARCH PROTOCOL

RESEARCH PARTICIPATION REQUEST

I am helping out with a research project that is being jointly sponsored by Michigan State University and St. Lawrence Hospital. The people who are doing this research would like me to ask you if you would be willing to be in the study.

In the field of psychology, mental health researchers are trying to learn more about how people adjust to life once they leave the hospital. The purpose of this research is to understand what kinds of things people believe they will be able to do and how sure they are that they can do these things once they leave the hospital.

People who volunteer to participate in this study will be asked to fill out two questionnaires. One questionnaire asks about things people often face when they leave the hospital. The other questionnaire asks about problems and complaints people may have. Both questionnaires together should take you about 30 to 40 minutes to complete.

Your responses to the questionnaires will be kept strictly confidential. Your name does not appear on the questionnaires, and I will separate your questionnaires from the Consent Form so your name will not be attached to the questionnaires.

This is the Consent Form, which I will ask you to sign if you agree to volunteer for this study. [Read Consent Form aloud.]

If you have any questions, I'd be happy to answer them.

I sincerely thank you for your cooperation, and I appreciate your time and input in this research.
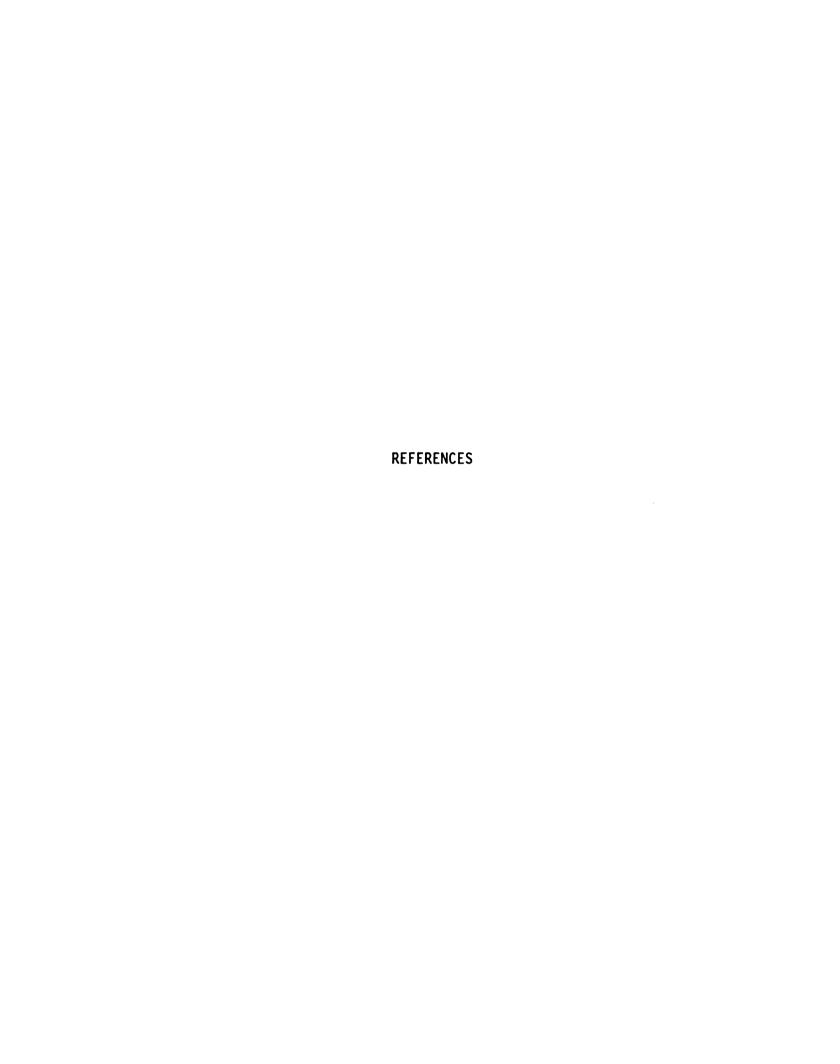
APPENDIX D

CONSENT FORM

CONSENT FORM

1. I have freely consented to take part in a study being conducted by Nancy Mikolaitis under the supervision of Dr. Robert Lent, Ph.D. and Dr. Lesley Jones, Ph.D.

2. The study has been explained to me and I understand the explanation that has been given and what my participation will involve. My participation in this research is completely voluntary.

3. I understand that my participation or lack of participation will not effect my current or future Community Mental Health services in any way.

4. I understand that my participation will pose no risks or discomfort to me, and that I am free to discontinue my participation in the study at any time without penalty.

5. I understand that my participation involves the release of the following information from my medical record to be used in the study: information from my social and medical history, and information about my condition during this hospitalization and plans for after-care.

6. I understand that the results of the study will be treated in strict confidence and that I will remain anonymous. Within these restrictions, results of the study will be made available to me at my request.

7. I understand that my participation in the study does not guarantee any beneficial results to me.

8. I understand that involvement in this study is not part of the usual treatment program at this hospital.

9. I understand that, at my request, I can receive additional explanation of the study after my participation is completed.

Signed: _____

Date: _____

I verify that the above named subject is capable of understanding the meaning of his or her participation sufficiently well to give informed consent.

_____   _____
Clinical Staff Member's Signature   Title

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