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INSTITUTIONAL RELOCATION: EXAMINATION OF EFFECTS AND THE EFFICACY OF TWO PREPARATORY TRAINING PROGRAMS

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INSTITUTIONAL RELOCATION: EXAMINATION OF EFFECTS AND THE EFFICACY OF TWO PREPARATORY TRAINING PROGRAMS

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Individuals previously exposed to a high frequency of stressful life events have been reported to have a high incidence of physiological and psychological problems, and a higher incidence of problems as compared to individuals exposed to few stressful life events. However, research examining these issues has methodological problems. In an attempt to examine the effects of a life event change in an experimentally controlled manner, the present investigation focused on one specific life event change, inter-institutional relocation of elderly.

A review of the literature examining the effects of relocation on the elderly revealed frequent inconsistencies among the studies, which were further confounded by methodological difficulties. The first aim of the present study was to collect a data base (verbal, behavioral, and physiological indices) prior to and after relocation, in an effort to determine exactly what changes occur as a result of relocation. Secondly, the influence of two preparatory training programs on the effects of relocation was examined.

Forty subjects were assessed on several measures prior to, immediately after, and again at three months following

relocation. Subjects were preselected, according to their scores on a mental status questionnaire, into either the low-functioning or the high-functioning group. In Experiment I, half (n=10) of the low-functioning group subjects participated in a behavioral program, which consisted of graduated exposure to postmove environmental stimuli and behavioral response training, plus a basic relocation preparatory program. In Experiment II, half (n=10) of the high-functioning group subjects participated in a verbal program, which consisted of coping skills and problem solving skills training, plus a basic relocation preparatory program; while the remaining half received only a basic preparatory program.

Hypotheses were based upon an organizational model which summarized the potential effects of a life event change into three stages. The influence of relocation of institutionalized elderly in the present study proved to be less dramatic than espoused by several earlier investigations. As hypothesized, low-functioning subjects exhibited an increase in passive-withdrawn behaviors following relocation. High-functioning subjects, however, unexpectedly tended to exhibit an increase in active, outgoing behavior following relocation. The present study

offers a plausible paradigm for further study of the effects of relocation and other life event changes in an experimentally controlled manner. The influence of the relocation preparatory training programs was varied. Although the verbal skills program did not significantly influence postrelocation behavior of high-functioning subjects, the behavioral skills program led to significantly favorable postrelocation changes among the low functioning subjects. Further investigation regarding the efficacy of the behavioral and verbal skills training program to reduce the negative influence of relocation and other life event changes is needed.

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CHAPTER I

INTRODUCTION

Investigations examining the influence of life event changes[1] (LECs) are numerous; however, due to methodological weaknesses subsequent interpretations are tenuous. The present study focuses on relocation of institutionalized elderly, a specific LEC, in an attempt to determine in an experimentally controlled manner the effects of relocation and also the efficacy of two training programs designed to limit the potential negative effects of relocation. Specific hypotheses are based upon a LEC organizational model suggested by the present investigator to account for the influence of relocation and related LECs. Although the results of the present investigation may not be generalizable to all subject populations or LECs, it is hoped that future studies will examine further the utility of the LEC model and the efficacy of preparatory LEC training. The first chapter will provide (1) a brief descriptive overview of the LEC research; (2) a discussion of theoretical conceptualizations of a LEC and presentation of a LEC organizational model; (3) a brief overview of the

relocation literature; and (4) a statement of aims and hypotheses regarding the present study.

Life Event Changes

The relationship between dramatic LECs and subsequent physiological and psychological problems has been noted frequently. For example, in 14th century Europe following the bubonic plague, which resulted in the death of nearly one third of the population, many survivors engaged in episodes of bizarre behavior including continuous dancing, ritualistic whippings and scourgings, mass persecution of Jews, child wanderings, and even a resurgence of lycanthropy (Hirst, 1953; Rahe & Arthur, 1978). A structured interview conducted one week after the death of President Kennedy revealed that over 89% of the sampled general population indicated having one or more psychiatric illness symptoms during the first four days following the assassination, while only 50% reported symptoms seven days after the assassination (Sheatsley & Feldman, 1964). Although the influence of dramatic LECs (e.g., earthquakes, prisoner-of-war experiences, world wars, tornadoes) have clear detrimental effects (e.g., Fritz & Marks, 1954; Lindemann, 1944; Ploeger, 1977), the influence of less severe LECs is less clear. These relatively minor LECs

may include marriage, widowhood, divorce, separation, pregnancy, birth of a child, illness, death of a loved one, start of school, graduation, retirement, relocation, starting a new hobby, or even vacationing.

Research examining the influence of LECs has shown that subjects who report the highest frequency of recent LECs have significantly greater numbers of physical illnesses (Cline & Chosey, 1972; Hinkle, 1974; Jacobs, Spilken & Norman, 1969; Marx, Garrity, & Bowers, 1975; Pancheri & Benaissa, 1978). In addition, significantly higher levels of recent LECs have been reported among patients who have attempted suicide (Brown, Sklair, Harris, and Birley, 1973; Paykel, Prusoff & Myers, 1975), who have a diagnosis of depression (Paykel, Myers, Dienelt, Klerman, Lindenthal & Pepper, 1969; Paykel, Prusoff & Uhenhuth, 1971), who died suddenly from heart disease (Hinkle, Benjamin, Christenson & Ullman, 1966; Rahe & Lind, 1971; Rahe, Romo & Bennett, 1974), and who were stroke victims (Adler, MacRitchie & Engel, 1971).

Several of these studies, conducted with a retrospective design, examined the frequency and stress ratings of LECs that occurred during the year prior to the onset of an illness or psychological disorder of interest.

Comparable measures were taken from control subjects who were healthy. Although a correlation between the incidence of LECs and subsequent problems are frequently reported, two methodological problems limit any general interpretation: the use of unstandardized and self-report measures to obtain an index of LECs, and inappropriate extrapolation from correlational data.

First, to obtain a measurement of the frequency and the stressfulness of LECs, several investigators have devised paper-and-pencil scales (Antonovsky & Kats, 1967; Brown & Birley, 1968; Holmes & Rahe, 1967). The scales were based upon the responses of sample subject populations who were asked to list and/or rate several LECs, regarding the amount of stress each LEC would produce if and when they occurred to the particular subject. Sample subjects' ratings were then collated to develop a rating scale in which each LEC was assigned a particular stress rating. Comparison of several scales currently in use reveals that investigators frequently disagree regarding item selection and ratings. Differences seem to result from conflicting treatment of objective and subjective events (Thurlow, 1971), desirable and undesirable events (Dohrenwend, 1973a), and controllable and uncontrollable

events (Brown, Sklair, Harris & Birley, 1973; Dohrenwend, 1973b; Dohrenwend, 1974). For example, possible differential effects between LECs that an individual is able to choose or predict versus LECs that are uncontrollable are frequently debated. Additionally, respondents selected from different cohort groups frequently disagree on the stress ratings of several LECs. For example, Miller, Bentz, Apante, and Brogan (1974) found that subjects from urban areas ranked the "mortgage greater than $10,000" item as the 22nd most stressful event on a list of several LECs, while subjects from rural areas ranked the same item as the 6th most stressful on the same list. Unless standardized scales are developed, between-study comparisons are limited. Furthermore, since the LEC scales rely on data collected retrospectively, their accuracy may be limited since the subject's recall of past experiences may be contaminated by the subject's present psychological or physiological state. For instance, depressed subjects' recall of past LECs may be influenced by the unique manner in which depressed clients appear to perceive the environment. Lishman (1972) and Lloyd and Lishman (1975), for example, found that depressed clients had a tendency to recall material of negatively toned content more easily and

readily than material of a more positive nature, and more easily than nondepressed clients. Similarly, depressed clients may also tend to recall more stressful LECs than nondepressed clients even though each group may have been exposed to an equal number of previous LECs. Unless subjects' recall of past LECs is shown to be a valid and reliable measure, its significance remains unclear.

Secondly, based on the finding that subjects who exhibit a particular disorder report a significantly greater number and higher stress ratings of previous LECs than healthy controls, investigators have implied that stressful LECs are a factor in the etiology of the disorder. However, significant correlations simply indicate that comparison groups differ in terms of certain characteristics (number of LECs reported and the disorder of interest). Implying any causal link between LECs and the disorder may not be appropriate. For instance, if some of the LECs, included in the LEC assessment scale, are actually symptoms of or caused by the disorder of interest (e.g., change in sleeping and eating habits or employment due to the onset of a heart ailment), then the relationship between these antecedent events and the disorder is confounded, and the assumption that the LEC caused the disorder would be incorrect (Dohrenwend & Dohrenwend, 1974).

Life Event Change: Theoretical Explanations

Individuals who report similar frequencies and stress ratings of previous LECs do not always exhibit similar problems as a result. For example, Hawkins, Davies, and Holmes (1957) found that 29% of tuberculosis patients who reported similarly high elevated LEC scores did not become ill during the subsequent year. Investigations examining prisoners-of-war also noted that some individuals do not become ill after being exposed to highly stressful LECs (e.g., Lifton, 1954; Spaulding & Ford, 1972). Although individual differences regarding differential response to LECs have been explained in terms of physiological and psychological variables, it has received little empirical investigation. Physiological explanations note the importance of genetic and constitutional predispositions as determinants of physiological reactions to stress (Schmale, 1972). For example, Hinkle (1972, 1973) noted that coronary heart disease seldom occurs in persons who do not have a history of hyperlipidemia, abnormalities of carbohydrate metabolism, hypertension, cigarette smoking, and a family history of heart disease, even if they are exposed to highly stressful LECs. Other explanations note the influence of close ties to others or the community

(Antonovsky, 1972), sociological interpretation of LECs (Brown, 1974), emotional reactions to stress and individual coping strategies (e.g., denial, approach, avoidance, Fenz, 1975; Lazarus, 1967).

Theoretical explanations for the influence of LECs have been limited almost solely in terms of an individual's reaction to stress or anxiety.[2] A LEC is believed to generate anxiety which in turn causes psychological and physiological decline. Further, it is assumed that the effects of a LEC could be offset simply by reducing resultant stress (via, for example, coping strategies, social supports, denial, or even avoidance). Although the influence of anxiety seems to be a significant consequence of a LEC, it does not appear to be sufficient to account for all the possible effects of a LEC. In an attempt to support this assumption and to suggest an organizational model to account for the influence of a LEC, related research is briefly reviewed.

A LEC entails two major components: (1) increased arousal[3] resulting from exposure to novel stimuli, and (2) an alteration of the reinforcement system due to stimuli changes. Exposure to novel stimulation elicits increases in arousal and subsequently two conflicting

responses: (1) an increase in anxiety leading to avoidance of the novel stimulation; and (2) the tendency for exploration- sensation seeking of the novel stimulation (e.g., Montgomery, 1955; Suomi & Harlow, 1976). Novel stimulation results in an approach-avoidance conflict (e.g., Dollard & Miller, 1950; Miller, 1944). The resultant approach or avoidance of the novel stimulation depends upon the relative strength of the anxiety and the sensation seeking states. For example, assuming the tendency for exploration remains constant, an individual faced with novel stimulation will, under low approach anxiety, respond to the novel stimuli; while under high approach anxiety, he will avoid the novel stimuli. On the other hand, when approach anxiety is low, an individual in a sensory deprived situation will tend to seek out stimulation while an individual in a sensory abundant situation will avoid the stimulation.

A general change in the reinforcement system, the second effect of a LEC, may result from a loss or gain of reinforcing stimulation and/or changes in discriminant stimuli. For example, an individual who loses reinforcing stimuli as a result of a LEC subsequently may exhibit a change in behavior and a decline in reinforcement attainment, while an individual who loses a punishing stimuli

may exhibit a change in behavior and an increase in reinforcement attainment. In addition, loss of apparently neutral stimuli (do not act directly as a reinforcement or a punishment) may also result in changes in behavior and reinforcement attainment. Specifically, when a behavior is consistently reinforced in the presence of a specific stimulus (discriminative stimulus) but not reinforced in the presence of another stimulus, the behavior will eventually be more likely to occur in the presence of the discriminative stimulus (Ferster, 1973). When the environment is changed in such a manner as to remove major discriminative stimuli, particular behaviors are unlikely to occur and potential reinforcements are not obtained. For example, a person who has been reinforced for cleaning his/her room in the presence of a particular staff member, but not reinforced in the absence of the staff member, may clean his/her room only when in the presence of the staff member. When the staff member is removed, the cleaning behavior extinguishes. Loss of reinforcing stimuli and discriminative stimuli may also be viewed as a major barrier to the individual's ongoing goal-directed behavior (e.g., loss of discriminative stimuli may make it impossible for an individual to perform a behavior needed to obtain a

reward). In this sense, a LEC may be considered as a stressor, since it acts as an immediate barrier to goals (Rule & Nesdale, 1976; Weybrew, 1967).

In relation to the two major LEC components, controllability and/or predictability have been noted to influence the effects of a LEC. Empirical investigations regarding the influence of controllability and/or predictability on LECs, however, are quite limited. Predictability refers to whether a person is aware beforehand when a particular LEC will occur (or simply the extent that the occurrence of a LEC is signaled). Whereas LECs such as marriage, divorce, graduation, and start of school are usually predictable, serious illness or injury, death of a spouse and being laid off from a job are usually unpredictable. Empirical evidence regarding the influence of predictability on the effects of LECs is minimal. However, research examining the influence of predictability of laboratory-induced aversive stimuli suggests that predictable aversive stimuli are less stressful (e.g., lower autonomic arousal levels; preference for predictable aversive stimuli) than unpredictable stimuli (e.g., D'Amato and Gumenik, 1960; Glass & Singer, 1972; Lanzetta & Driscoll, 1966; Weiss, 1970). From these findings one may predict

that the predictability of a LEC may regulate to some extent post-LEC arousal.

Controllability of a LEC entails: (1) pre-LEC decisional control, and (2) post-LEC behavioral control. Pre-LEC decisional control refers to an individual's available option to either avoid or not to avoid a LEC (the probability of an outcome is dependent upon the individual's behavior). For example, faced with the prospect of marriage, an individual is given the opportunity to choose to marry or not to marry. On the other hand, an individual who does not have decisional control does not have a choice in regard to the LEC; no matter what he/she does, the consequences are the same (the probability of an outcome is independent of the individual's behavior). Similar to predictability, LEC decisional control is not always possible (e.g., individuals have little choice in whether to avoid or not to avoid a serious injury, death of a family member, or even contracting the flu). When decisional control is possible, it has been suggested to have influence on the effects of a LEC (e.g., Schultz & Brenner, 1977). Laboratory studies, examining the influence of exposure to uncontrollable events, reveal that compared to subjects exposed to controllable aversive stimuli, those exposed to

uncontrollable stimuli exhibit greater deficits in subsequent performance (e.g., Hiroto, 1974; Miller & Seligman, 1975), a reduction in the frequency of social, aggressive and sexual behavior (e.g., Maier, Anderson & Lieberman, 1972; Seligman, 1975), and a greater incidence of clinical depressive behaviors (e.g., Gatchel & Proctor, 1976; Miller & Seligman, 1973). Based on these studies, it has been hypothesized that persons exposed to voluntary LECs will fair better after a LEC than those faced with a similar but involuntary LEC. Investigations regarding the influence of decisional control of LECs, in addition to sharing similar methodological difficulties with other LEC studies (mentioned earlier), are confounded with the influence of predictability and post-LEC behavioral control.

Post-LEC behavioral control refers to the ability of people to have control over their environment after the LEC has occurred. After a LEC, individuals are confronted with novel stimuli and loss of old stimuli which result in significant changes in their environment. To regain control over the environment they must adapt to these changes, which may include stimulus overload or deprivation, gain or loss of reinforcement and/or changes in discriminative stimuli. Post-LEC behavioral control, therefore, depends

upon the individual's knowledge of the behavioral skills necessary to adapt to the new environment (e.g., in a manner to regain loss of reinforcement) and his/her ability to perform these skills adequately. For example, following the death of a close spouse, in order to regain a pre-LEC reinforcement level, a widower must be able to respond to his new environment in a manner which will recapture lost reinforcement (e.g., companionship, food prepared by his spouse) and must learn to attend to new discriminative stimuli (e.g., he can no longer depend upon spouse cues reminding him to eat or awaken on time in the morning).

In view of the aforementioned effects of a LEC, an individual's overall reaction to a LEC may be organized into a three-stage model. The effects of a LEC depend upon an individual's ability to (1) cope[4] with the arousal resulting from exposure to novel stimulation; (2) cope with changes in reinforcement and discriminative stimuli; and then (3) respond to the new environment (stimuli after the LEC) in such a manner as to adapt to general changes in the reinforcement system (e.g., regain lost reinforcement, adapt to new discriminative stimuli). The inability of an individual to perform each step adequately will

lead to a set of behaviors reflecting the deficits. For example, a person, unable to cope with the high levels of initial arousal, may withdraw from activities in an attempt to return to an optimal level of stimulation (Zuckerman, 1969) or after repeated sustained arousal may exhibit physiological change and subsequently a greater susceptibility to illness (Lipowski, 1974). On the other hand, a person who coped well with initial arousal but is unable to regain a loss of reinforcement caused by the LEC may exhibit depressive behavior.

Relocation

The review of the research examining the effects of LECs suggests that exposure to stressful LECs results in physiological and psychological decline. However, due to methodological difficulties, interpretation of these studies is limited. In an attempt to avoid the limitations of these studies, the present study focused specifically on one particular LEC, relocation of institutionalized elderly.

With the advent of urban renewal, governmental upgrading of local institutions, and normalization attempts coupled with the physical decline, decreased financial resources, and psychological disabilities of many elderly individuals,

the elderly often find themselves faced with the necessity of relocation. The review of the research examining the effects of relocation on the elderly (Appendix A) reveals much contradictory evidence. For example, investigations comparing differential mortality rates of various institution populations, before and after relocation, found very different results. Aldrich and Mendkoff (1963) reported an increase, Zweig and Csank (1975) found no change, and Novick (1967) reported a decrease in mortality rate from that which was anticipated. Inconsistencies are also shared regarding other possible effects of relocation (e.g., increases in disease, general physiological decline, increased heart failure, signs of depression, and withdrawal). These inconsistencies are further complicated by methodological difficulties. Absence or lack of adequate control groups, poor subject selection procedures, use of insensitive dependent variables, and lack of interobserver reliability are quite common. Inconsistencies between studies have been explained in terms of the physical or psychological health of elderly subjects, positive and negative conditions of the new and old facility, subject controllability concerning the move, subject personality characteristics, amount of change in living

conditions after relocation and subject coping responses to deal with stress. These explanations, however, lack a theoretical base, and have been of a post hoc nature.

The frequent use of mortality rate as the sole dependent variable is a significant problem. Although it is true that early reports of high mortality among the elderly after relocation (Aldrich & Mendkoff, 1963; Jasnau, 1967; Killian, 1970) did serve to stimulate subsequent relocation research, the continued interest in only such an extreme dependent measure leaves many questions unanswered. For instance, knowing that an increase in mortality rate occurs among an elderly population after relocation, does not contribute to the identification of factors which precipitate the death. Possible factors may include an increased incidence of disease, depression, activity limitations, feelings of helplessness, and life dissatisfaction. The reactions of survivors to relocation are also presently poorly understood. Some sort of physiological and psychological changes probably result. With the exception of only a few investigations these variables have remained unstudied (Cochran, Sran & Varano, 1977; Kral, Grad & Berenson, 1968; Lawton, Patnaik & Kleban, 1976).

In response to early indications that the effects of relocation are adverse, a few investigations have examined the effectiveness of prerelocation treatment strategies, designed to minimize the negative effect of relocation (Lawton & Yaffe, 1970; Miller & Lieberman, 1965; Pino, Rosica & Carter, 1978; Schultz & Brenner, 1977; Zweig & Csank, 1975). For example, Pastalan (cited in Schultz & Brenner, 1977), examining the effectiveness of three preparatory programs (group counseling, individual counseling, and site visits to the new facility), reported a decrease in postrelocation patient mortality for certain groups of patients participating in the preparatory programs. Pino, Rosica, and Carter (1978), also investigating the effectiveness of a relocation preparatory program, reported a nonsignificant treatment effect on mortality but a significant effect on several other postrelocation indices (activities of daily living, life satisfaction, mental status). However, these studies (addressed in detail in Appendix A) have several methodological limitations which may have confounded their results. For example, although Pastalan did not report on subject group selection procedures, it appears as though preparation training was offered to subjects on a voluntary basis

causing subject selection biases. Subjects who indicated a desire to participate in the preparation program were placed in the preparation groups, while those who did not want to participate were placed in the no-treatment control group. Pino et al. also did not specify treatment group selection procedures. Additionally, since both studies failed to control for the effect of additional attention given to treatment subjects, it is impossible to delineate the effects of the preparation treatment packages from simply the increased attention given the treatment subjects.

Although the effects of relocation are not clear, investigators have recently suggested a relationship between stress and relocation (Cohen, Conroy, Frazer, Snelbecker & Spreat, 1977; Rowland, 1977; Schultz & Brenner, 1977). These suggestions are based on the assumption that LECs are stressful and ultimately damaging to the individual. Since relocation is a significant LEC, it too, has been considered stressful and potentially harmful to the individual.

Schultz and Brenner (1977) further suggested that since predictability and controllability have been shown to be directly related to laboratory-induced stress (e.g., Glass & Singer, 1972; Seligman, 1975), these factors

also should be related to the effects of relocation. Specifically, they noted that (1) the greater the amount of choice (decisional control) an individual has regarding relocation (voluntary vs. involuntary relocation), the less the negative effects, and (2) the more predictable the new environment, the less the negative effects. The more predictable environment was considered to be a relocation environment that was very similar to the old environment. It appeared as though the authors assumed that the more similar the new environment was to the previous environment, the more easily the person could predict what to expect, and consequently know how to act appropriately.

Research examining these issues is quite limited. Ferrari (1963), comparing two groups of aged individuals, one entering an institution voluntarily and the other involuntarily, noted a significant difference in post-relocation mortality rate between the groups. Within three months after relocation, although over 94% of the involuntary group died, less than 3% of the voluntary group died. However, since premove differences between the groups were not controlled for (e.g., health, age, and physical functioning), the data may not be attributable to the controllability of the move. Similar problems exist

in a number of related studies (Borup, Gallego, & Heffernan, 1979; Killian, 1970). Investigating the influence of similarity between the premove and postmove environment, Bourestom and Tars (1974), comparing two groups of patients involuntarily relocated, found that those patients relocated to a home radically dissimilar to their old home had a higher mortality rate than patients relocated to a home only moderately dissimilar to their old home. Similarly, Schultz and Aderman (1973) found that among terminal cancer patients, those faced with relocation from their own home to a cancer institute (postrelocation environment quite dissimilar to the prerelocation environment) lived for a significantly less time after relocation than equally ill subjects moved from a hospital to the institute (postrelocation environment quite similar to the prerelocation environment).

Statement of Problem

Relocation appears to be a major LEC for institutionalized elderly. As suggested earlier, relocation consists of exposure to novel stimuli and an alteration of the individual's reinforcement system. Novel stimulation may include unfamiliar routines, activities and regulations, and interactions with new staff, new roommates

and potential friends. Relocatees are exposed to unfamiliar tastes (e.g., food and water), smells (e.g., new paint or garden), sounds (e.g., elevator or call signals), tactile feelings (e.g., a new bed and chair), and sights (e.g., a view from a third-floor window). Novel changes also occur in spatial location (e.g., bedrooms, bathrooms, dining areas, water fountains, nursing stations, clocks). Loss of old stimuli, essentially the converse of novel stimulation, include privation of familiar staff, routines, roommates, and friends, loss of old sensory stimulation, and loss of familiar spatial location. Relocatees may be confronted also with the loss of personal possessions and, depending upon the dynamics of the new and old facility, are confronted with more or less control over their lifestyle (e.g., new facility may or may not allow for flexibility of rules to accommodate individual desires).

The first aim of the present study was to delineate the effects relocation had on institutionalized elderly. The review of the literature examining the effects of relocation (Appendix A) reveals contradictory results as well as methodological limitations. In an effort to correct for noted difficulties found in previous relocation studies, the present study, for example, reduced dependence

on retrospectively collected data, used several dependent measures all of which were tested for reliability, and included follow-up assessment. Since the relocation was a preplanned LEC, it was possible to collect not only postmove assessments but also premove baseline data. These measures, designed to assess verbal, physiological, and behavioral responses, were administered two weeks prior to relocation, three weeks following relocation, and at a three month follow-up. Additional behavioral measures were recorded daily for twelve days prior to relocation, eighteen days after relocation, and six days at follow-up.

The hypothesized effects of relocation were based upon the three-stage organizational model. The model suggests that an individual's reaction to relocation depends upon his/her ability to (1) cope with arousal resulting from exposure to novel stimulation; (2) cope with changes in reinforcement and discriminative stimuli; and (3) respond to the environment in such a manner as to adapt to general changes in the reinforcement system (re-gain pre-LEC behavioral control). Whereas relocatees who are able to adequately respond to the three stages of relocation will exhibit little decline or even improvement on the dependent variables, those who do not have adequate

skills will exhibit a decline on the dependent measures. It was hypothesized that the participants in the present study would not have adequate skills to deal with relocation, since they have been institutionalized for an average of close to eight years, have few social supports, carry chronic psychiatric diagnoses, and on the average have moderate intellectual impairment. The most significant behavior changes were hypothesized to occur immediately following relocation, at which time subjects are initially exposed to profuse novel stimulation and changes in reinforcement and discriminative stimuli. Individuals confronted with an overload of novel stimulation (increases in amount of novel stimulation which interferes with responding in a manner to maximize reinforcement) may temporarily withdraw from the stimulation source to regain an optimal level of stimulation (Dember, 1965; DeMyer-Gapin & Scott, 1977; Mason, 1967; Zuckerman, 1969), with optimal level of stimulation referring to the amount of stimulation which results in responses which maximize reinforcement. In addition, it was hypothesized that the individual would exhibit a general decline in the frequency of previously reinforced behaviors due to changes in reinforcement and discriminative stimuli. Specifically, it was

expected that after relocation individuals would exhibit increases in the frequency of passive activities including being alone, staying in their bedroom, lying down and being silent--accompanied by decreases in time spent outside, on another floor, in social interaction, and grooming and cleaning behaviors. In addition, declines were expected in the quality of self-maintenance behavior, interactive behaviors during an assessment interview, intellectual functioning, and physical functioning. In an attempt to clarify earlier reports of increased death rates after relocation, death and discharge information was collected for subjects in the present study and for the entire relocated institutional population. Contrary to previous attempts to examine death rate changes (reviewed in Appendix A), in the present study, the information acquired from the institutional records appeared somewhat more reliable since (1) they had been collected by the same institutional staff person, who reported using similar record-keeping procedures over the entire five-year period of interest; and (2) the institutional administrative staff reported no policy changes regarding patient admittance to the facility over the five-year period studied. It was hypothesized that the death rate as well as the discharge

rate would be somewhat higher subsequent to and following relocation than during a similar time period of previous years.

The second aim of the present study was to examine the efficacy of two relocation preparatory training programs, derived from the LEC organizational model. The verbal program which utilized primarily verbal instruction, modeling, and role playing, was designed to train subjects to better cope with problem situations which may occur as a result of relocation and then to deal with such problems in a manner which maximizes subsequent reinforcement. The behavioral program which utilized response training and exposure to the postmove environment (modeling, behavioral rehearsal, in vivo practice, and verbal instruction), attempted to familiarize subjects, in graduated exposure steps, with potential relocation changes and to teach subjects response skills that would be necessary to attain maximal postrelocation reinforcement. The verbal and behavioral programs were used in order to meet the needs of two different subject populations and agency inflexibility. Since low-functioning subjects (moderate to severe intellectual impairment) had been assessed as having some deficits in communication skills, short- or long-term memory

and/or orientation, the verbal program, based primarily on verbal instruction, would not be functional (Pastalan, cited in Schultz & Brenner, 1977). On the other hand, since the behavioral program was thought to be disruptive to institutional daily functioning (e.g., frequent previsits for patients which included some staff members), the agency did not agree to include more than half of the subjects in the behavioral program. It was therefore decided to include lower functioning subjects in the behavioral program and higher functioning subjects (low to mild intellectual impairment) in the verbal program.

Half of the low-functioning group participated in the behavioral program which included gradual exposure to postmove environmental stimuli and behavioral response training, while half of the high-functioning group participated in the verbal program which included coping skills and problem-solving skills training. The coping skills training (of the verbal program) and the gradual exposure to postmove environmental stimuli (of the behavioral program) were designed to reduce postrelocation arousal resulting from exposure to novel stimulation and changes in reinforcement and discriminative stimuli (steps 1 and 2 of the LEC organizational model). The

problem-solving training (of the verbal program) and the response training (of the behavioral program) attempted to increase relocatees' postmove behavioral control (step 3 of the LEC organizational model). It was hypothesized that subjects exposed to the training programs would not exhibit the hypothesized effects of relocation (e.g., fewer passive activities, no decline in the quality of self-maintenance behaviors, interactive behaviors, intellectual functioning and physical functioning).

CHAPTER II

METHOD

Subjects

Subjects were 21 male and 19 female residents of the Evergreens Nursing and Rest Home. Twenty-seven of these subjects were housed in the progressive care unit of the home while the remaining 13 were housed in the rest home unit. The progressive care unit was a locked unit which was designed to serve residents exhibiting, or previously diagnosed as having, a severe chronic disorder necessitating constant supervision. These patients were believed to be a threat to themselves or others if left unattended. They carried diagnoses such as schizophrenia, organic brain syndrome, mental retardation, seizure disorder, depression, involutional melancholia, and alcoholism. Residents of the rest home, although they had diagnoses similar to the progressive care residents', supposedly did not need to be confined to the grounds of the facility nor did they need constant supervision.

Subjects ranged in age from 37 to 88 years (Mean= 63.4 years; Median = 65.6 years). The length of stay for

subjects at Evergreens ranged from 42 years to less than one year (Mean = 7.87 years; Median = 5.6 years). Prior to and during the experimental procedures, all subjects received some chemotherapy. Individual drug regimens included one or more of the following medications: mellaril, haldol, navane, congentin, thorazine, dilantin, phenobarbital, arthropan, triavil, valium, benadryl, surfax, prolixin, tolinase, loxitane, stelazine, elavil, and sustacal.

Forty-eight subjects were approached by the experimenter regarding their participation in the present study. The subjects were (1) told briefly about the nature and purpose of the study, (2) asked to sign a release form if they agreed to participate (see Appendix B), and (3) given the option to refuse to participate. Overall, eight subjects were excluded from the study: two subjects because they refused to participate and six subjects because they were moved from the facility several days earlier than expected (prior to the implementation of treatment).

Subjects were preselected into one of two groups according to their scores on the Short Portable Mental Status Questionnaire (Pfeiffer, 1975). The mental status questionnaire consists of ten questions designed to assess

intellectual functioning (orientation to time, place, and person). A high score on the mental status questionnaire indicated lower functioning (questionnaire addressed in detail below). Subjects who scored in the upper median were placed in the "low-functioning group" (subjects included in Experiment I) while those with the lower median scores were placed in the "high-functioning group" (subjects included in Experiment II). The low-functioning group mean score of 8.55 errors on the mental status questionnaire fell in the severe intellectual impairment category (8-10 errors) while the mean score of 4.85 for the high-functioning group fell between the mild (3-4 errors) and the moderate intellectual impairment category (5-7 errors). Table 1 (Appendix D) outlines pretreatment characteristics of subjects in the low-functioning and high-functioning groups.

Setting

The Evergreens Nursing Center and Rest Home, a non-profit corporation, is located in Greensboro, North Carolina. The Evergreens is a member of the American Nursing Home Association, the American Association of Homes for the Aging, the North Carolina Association of Nursing Homes, is licensed by the North Carolina State Board of Health and

is approved for both Medicare and Medicaid support. The home which has been in operation since 1965, has essentially three programs: nursing center, rest home, and progressive care unit. Nursing center residents are offered 24-hour skilled nursing care, physical therapy, rehabilitative services, care of the critically ill, as well as room and board. The rest home and the progressive care unit services include limited nursing care, custodial care, some recreational programs, and room and board.

The Evergreens relocated their residents from an old rundown facility to a new modern building. The old facility consisted of eight one-story buildings. The buildings were physically deteriorated, bug infested, dirty, smelly, and had poor temperature control. Although most of the rest home residents usually shared a small to moderate sized bedroom with another patient, a few had small private rooms. All rest home residents shared a community bathroom and shower with about 20 other residents. All progressive care residents had private rooms each equipped with a toilet and they shared a community shower.

The new facility was housed in a single four-story building. Each floor was divided into four wings. Subject floor and room assignment was done by the administrative

staff. Nursing home patients were housed on the second floor and rest home and progressive care residents on either the third or fourth floor. Most of the rest home and progressive care patients shared their bedroom with another patient. The bedrooms, considerably larger than those at the old facility, had an adjoining bathroom shared by the neighboring residents. Each wing of each floor shared a community shower. The new building was kept immaculate and it was totally air conditioned.

The relocation of the residents took place during a two-week period, from May 11 to May 25, 1978. Among the subjects: 3 were moved on May 18, 1 on May 22, 29 on May 23, and 7 on May 24.

Procedure

The experimenter was introduced to small groups of patients at the home. The nature and intent of the proposed research project was explained to the patients and they were asked to participate. Specifically, they were told that the study intended to delineate the effects of relocation on patients and examine therapeutic procedures designed to help reduce any negative effects caused by relocation. The week following the introduction was "get acquainted" period during which time the patients

became more familiar with the experimenter and several of the observers, all of whom kept a low profile. During this time the observers began to practice using the behavioral checklist (addressed in detail below). The behavioral checklist was modified during this period to make it more valid and reliable. After the checklist was finalized, checklist reliability data were collected.

The second week of contact included an initial interview with each subject and the beginning of behavioral checklist data collection. The initial interview with each subject consisted of (1) a personal introduction; (2) presentation of the mental status questionnaire; and (3) assessment of the interview (utilizing the VIRO assessment scale). After being assigned to either the high-or the low-functioning group, according to the mental status questionnaire data, subjects were given the pretreatment assessment battery. This assessment procedure was repeated three to four weeks following relocation and then again three months after relocation. The assessment battery included the (1) Short Portable Mental Status Questionnaire; (2) Philadelphia Geriatric Center Morale Scale; (3) Physical Self-Maintenance Scale (nurse and self-report); (4) Physical Performance Scale; (5) Face-Hand Test; and

(6) a personal interview utilizing the VIRO assessment scale. A detailed description of the assessment procedures used in the study follows.

A. Short Portable Mental Status Questionnaire. Developed by Pfeiffer (1975), this 10-item questionnaire was designed to test the presence of, and determine the degree of, intellectual impairment; specifically, short and long-term memory, orientation to surroundings, current event information and serial mathematical task performance. The questionnaire was tested, standardized, and validated with both institutionalized and community dwelling adults. Based on standardization data, Pfeiffer identified four error score ranges: intact (0-2 errors); mildly impaired (3-4 errors); moderately impaired (5-7 errors); and severely impaired (8-10 errors). In two studies examining two broad categories (intact mentality and mild impairment versus moderate and severe impairment), the authors reported a 92% and 88% agreement between the mental status score and psychiatric clinical diagnosis when the mental status questionnaire indicated definite impairment; and an 82% and 72% agreement when the mental status questionnaire indicated either no impairment or only mild impairment. Smyer, Hofland, and Jonas (1979), examining three categories--(a) no

or minimal impairment (0-4 errors), (b) moderate impairment (5-7 errors), and (c) severe impairment (8-10 errors)--reported an 86% agreement between the mental status questionnaire score and 26 variables examining social and economic status and capacity for self-care when the mental status questionnaire indicated no or minimal impairment; 64% agreement when the mental status questionnaire indicated moderate impairment; and 75% agreement when the mental status questionnaire indicated severe impairment. Pfeiffer (1975) also reported two studies indicating test-retest reliability correlations of .82 and .83. Interobserver scoring reliability[5] during pretesting and periodically throughout assessment in the present study was 97.50% (n=12).

B. Face-Hand Test. This technique, as modified from Fink, Green, and Bender (1952) by Kahn, Pollack, and Goldfarb (1961) was a simple diagnostic test for brain damage. The procedure involved double simultaneous stimulation by the examiner to specific areas of the client's face and hand. The subject and examiner sat facing each other with the subject's hands resting on his/her knees. The subject was touched by the examiner simultaneously on one part of the face or hand (e.g., right cheek, right hand) and the

dorsum of one hand. A subject's ability to report both stimulation points indicated less probability of brain damage than subjects who reported one place touched (omitting the other) or who reported the location of the touches incorrectly (Kahn et al., 1961). Cross validation indicated that four or more errors on the scale correlated with electroencephalogram-slow wave frequency abnormality; great enlargement of the ventricular size echoencephalography; increase of air over cortex; decrease of brain weight utilization and blood flow (Goldfarb, 1973). Interobserver scoring reliability during pretesting and periodically throughout assessment in the present study was 98.30% (n=10).

C. Physical Performance Scale. This test, developed by Goldfarb (1964), was designed to assess physical rehabilitation potential by examining neuromuscular power. The author reported that poor performance on this scale correlated with a physician's estimate of poor physical functional status and prognosis. The subject was asked to perform 10 simple motor tasks. In the present study test-retest reliability during pretesting was 100% (n=7) and interobserver scoring reliability during pretesting and periodically throughout assessment was 100% (n=10).

D. Physical Self-Maintenance Scale. This scale, adapted by M.P. Lawton and E. Brody from the Langley Porter Scale (Lowenthal, 1964), was designed to assess the subject's competence (on a five-point multiple-choice scale) in dressing, grooming, eating, bathing, locomotion, and toileting activities. Two separate ratings were made: (1) subject was asked to verbally rate him/herself on the scale; and (2) the staff nurse most familiar with the particular subject was asked to rate the subject on the scale. Goldfarb (1975) noted that performance on these daily life activities was a good indicator of the limitations of daily functioning as well as the severity of brain damage. Test-retest reliability on subject's ratings in the present study taken during pretesting was 94.58% (n=7). Agreement between two nurses most familiar with a sample of the subject population was 86.33% (n=10). The interobserver scoring reliability for the nurse report was not tallied since the nurse and the observer filled out the scale together (no other observer was present).

E. Philadelphia Geriatric Center (PGC) Morale Scale. This scale, developed by Lawton (1976), consisted of 22 short statements with simple dichotomous response alternatives. It was designed to assess the respondent's

general morale including surgency, attitude toward own aging, acceptance of status quo, agitation, easygoing optimism and lonely dissatisfactions. The author reported the scale's test-retest reliability in two studies to be .75 and .80. When cross-validated with the Life Satisfaction Rating Scale (Neugarten, Havighurst, & Tobin, 1961) the authors report a .57 correlation. Lawton also found that high morale scale scores among 380 elderly people about to relocate significantly correlated with a number of variables such as positive expectations for the new environment, perception of self as more active than same age peers and engagement in activities (e.g., reading, movies, card playing). Interobserver scoring reliability on the scale, in the present study, was 96.97% (n=12).

F. VIRO: A Scale for Assessing the Interview Behavior of Elderly People. The VIRO scale, developed by Kastenbaum and Sherwood (1976), was designed to give assessment of client's (1) vigor-energy level manifested by the client during the interview; (2) intactness- client's cognitive functioning with respect to socially appropriate behavior during the interview; (3) relationship- client's level and style of interacting with the interviewer; and (4) orientation- client's cognitive functioning as assessed by

questions concerning time, place, and interview content. The orientation scale was not included in the present study since it was very similar to the mental status questionnaire. Kastenbaum and Sherwood noted that the exclusion of the orientation scale would not interfere with the other VIRO scales. In addition to the vigor, relationship, and intactness scales, the present study also utilized a fourth category which refers specifically to item 27 on the VIRO scale. The item was designed to rate how comfortable or how much in distress the client appeared during the interview. Since the item appeared in the VIRO scale but was not addressed in the specific subscales, it was treated by itself. Although Kastenbaum and Sherwood did not present specific data on the reliability of the VIRO scale, they did report that reliability for each individual rating in their training sessions was consistently within .5 of the mean of the training group. Interobserver scoring reliability during the present study indicated 83.33% agreement on the vigor scale; 91.67% on the comfortable; 83.33% on the relationship scale and 85.00% on the intactness scale (n=12).

Behavioral Observation

In addition to the assessment battery, behavioral

observation data were collected for at least 12 days prior to relocation, during the 18-day period following relocation, and then for six days three months following relocation.[6] The behavioral checklist (Appendix C) was developed to give an objective evaluation of behavior change in the present population. Formulation of the final checklist entailed several stages. First, the initial draft was written and used in preliminary observer training. Sample data and interobserver reliability were then collected. Some of the checklist items were then changed and redefined in an effort to decrease confusion and subjectivity among observers and to make the data collection more efficient. For example, observers were confused about the specifics of the open and closed door variable (which was originally defined simply as either open or closed). On occasions when a door was slightly open, they did not know whether to rate it as open or closed. Consequently, a closed door was redefined as a door which was less than three inches ajar. By the end of the second week of contact, the checklist was finalized and data collection begun. The seven major categories of behavior included in the checklist were: (1) position, (2) noise, (3) eye position,

(4) individual activity, (5) interactive activity, (6) location, and (7) proximity.

1. Position was intended to monitor the body position of the subject. Three positions were specified: lying down, sitting up, and standing.

2. Noise was intended to monitor the frequency of sounds produced by the subject. Subcategories included sounds and silent.

3. Eye Position was designed to monitor the eyelid position. Three eye positions were specified: eye open (eyelid open), eye closed (eyelid closed), and can't determine (observer was not able to observe the eyelid position).

4. Individual Activity was intended to monitor instances in which the subject was engaging in a solitary activity (an activity which he/she does by him/herself). Subcategories included (a) passive (e.g., performing no tasks, chair rocking, or talking to self), (b) locomotion (e.g., walking, running, being helped to move, or rising or seating self), (c) consumatory activities (e.g., eating, smoking, or chewing tobacco), (d) cleaning activities or grooming self, and (e) solitary tasks (e.g., television viewing, playing a solitary game, reading, sewing, and writing).

5. Interactive Activity was intended to monitor engagement in activities which involve others, including playing a game (e.g., checkers, bingo), talking or helping someone else (e.g., lighting another patient's cigarette, or helping someone walk).

6. Location was intended to monitor the whereabouts of each subject at each observation. Subcategories included (a) patient's room, including own room door open or closed, (b) group rooms, including activity room and dining area, (c) lobby (nursing station) or hallway, (d) another wing, and (e) outside building.

7. Proximity was designed to monitor the distance (number of feet) subjects were from other individuals or whether the subject was located in a room by him/herself.

Seven undergraduates and the author served as observers. Observers were thoroughly trained prior to data collection and periodically throughout the study. All observers were aware of the experimental design of the present study; however, they (with the exception of the author) were blind to subjects' group assignment. Behavioral checklist interobserver reliability was calculated periodically throughout data collection (Table 3, Appendix D).

Subjects were observed using a time sampling method. They were observed once every 30 minutes for a 10-hour time period (9 A.M. to 7 P.M.) daily. Behaviors occurring at each observation were recorded directly on the checklist.[7]

Death and Discharge

The Evergreens Inc. death and discharge information regarding their patients since 1973 was collected and examined. A discharge was defined as an official patient release from the facility. Discharges which soon afterward ended with the patient's death were considered for the purposes of the present study as a patient death rather than discharge. For example, emergency releases to community hospitals which terminated in the patients' deaths were considered in our analysis as patient deaths. Record-keeping had been compiled by the same staff person since 1973. Validity and reliability of the data were not obtainable.

Treatment

All subjects, as well as a number of other residents at Evergreens, were involved in a basic relocation preparatory program that was designed by the present investigator and suggested by previous research as useful in reducing

the negative effects of relocation.[8] The basic program was offered to all patients since it was not deemed ethical to withhold treatment that may be helpful to them. In addition, it appeared as though agencies faced with the relocation of their patients were incorporating certain components of the basic program more routinely. Consequently, it was thought useful to examine relocation effects in terms of subjects who have been exposed to a basic program rather than atypical subjects who received no preparatory program. The basic program consisted of (1) a previsit to the new facility for each patient; (2) a few meetings with a volunteer from the community; (3) a slide presentation concerning the relocation; (4) frequent reminders about the move; and (5) some involvement in packing and unpacking their personal belongings.

1. The previsit to the new facility took place two weeks prior to the actual relocation. Since the visit was presented to the residents as a voluntary task, several refused to attend. The patients were taken to the new building, shown a room similar to the one they would be assigned to, and all questions they asked about the move were answered by the touring staff.

2. A volunteer from the community was assigned to each patient. The volunteers attended workshops regarding the relocation and the new facility (presented by Evergreens Inc. staff). The volunteers were asked to visit the patients a number of times prior to the move and two times after the move. They were asked to be a friend to the patient and to answer any patient questions about the move.

3. A slide presentation was presented by the present investigator with the help of several volunteers to all patients two weeks before the move. The presentation included pictures of the new building, rooms, dining and activity areas and outside views of the facility. All questions elicited by the patients regarding the new facility were answered. Refreshments were served at the presentation to lure patients who were hesitant about attending the presentation and to make it more enjoyable to the patients and staff.

4. Staff were asked to remind the patients frequently about the upcoming relocation. The frequency of these reminders, however, is not known. In addition, two memos from the Evergreens staff about the relocation were sent to the patients.

5. All patients were intended to be involved in packing, transferring and unpacking some of their personal belongings. A plastic shopping bag was supplied to every patient prior to the move for packing. The patients were to bring the packed bags with them when they were transported to the new facility. Once at the new facility, the patients were then supposed to be assisted by staff in unpacking their belongings. These procedures, however, were not followed as planned. Although the bag was given to each patient, the staff either did not assist the patients properly to ensure that the patients used them to transport their personal possessions or the staff packed the patient's belongings into the bag and then the bags were transported to the new facility by the staff. Most of the subjects in the present study, however, utilized the bags in the correct fashion.

As mentioned earlier, subjects were placed into either the low-functioning group or the high-functioning group according to the mental status questionnaire data. In addition to the basic program, half of the low-functioning group was randomly assigned to a behavioral skills program while the other half was assigned to a no-treatment control; and half of the high-functioning group was randomly assigned

to a verbal skills program while the other half was assigned to a no-treatment control group.

Behavioral Skills Program

Subjects assigned to this program received training on behaviors that they might need to function adequately in the new facility. Treatment techniques included role playing, modeling, in vivo practice, shaping, therapeutic instruction, and feedback.

A volunteer was assigned to each subject in this group. twenty employees of a local research facility (Ciba-Geigy Corporation) served as volunteers. These volunteers attended training sessions prior to their first meeting with their assigned subject. The volunteers received instruction on the implementation of the specific behavioral program for these subjects. During these sessions modeling and role playing were used as training devices and also to evaluate the volunteer's progress.

The behavioral skills program consisted of two previsits to the new facility (in addition to the basic program previsit) and one skills training session during the first week following relocation.[9] During the previsits, volunteers reviewed or shaped up responses that subjects needed when they moved to the new facility. For example, since they were to be housed on the third and fourth floor

in the new facility, the patients needed to develop or use novel skills (e.g., using elevator or stairs) in order to do similar activities that they performed in the old facility (e.g., going outside). According to the Evergreen staff, many of these patients, during their whole lives, had never been residents in anything but first-floor housing. Additionally, some subjects indicated a fear of heights and one indicated a fear of elevators. Gradual exposure to these and other novel stimuli (e.g., new dining areas, bedrooms, activity and recreation rooms, rehabilitation room, and outside grounds) was conducted by the volunteers. The subjects were familiarized with the new spatial location of their room, nursing station, friend's new room, exits, bathrooms, activity rooms, T.V., and other pertinent stimuli. Sensory characteristics of the new facility were also presented. For example, subjects were exposed to the smells of the new building and outside, new sounds such as the intercom and elevator, taste of water, the view from a fourth-floor window and the feel of the new furniture. Also specific behaviors, such as how to use the elevator, find the dining hall and activity room, use a call button to call for a nurse, go outside, use the water fountain, and locate the cigarette and

candy-vending machines, were reviewed or shaped up by the volunteers. In addition, these patients were shown pictures of the new facility by their volunteers (at the old facility) twice during the one-week period prior to their move.

During the first week following relocation, these subjects participated in one additional behavioral skills session (lasting for about 30 minutes).[10] During these sessions, the investigator reviewed and had the subject practice several of the behaviors shaped in training. The patients were escorted throughout the new facility and outside grounds by the investigator who encouraged in vivo practice (e.g., patient was asked to run the elevator and escort the investigator outside).

Verbal Skills Program

Subjects assigned to this group participated in two sessions (lasting between 30 and 45 minutes) with the therapist (present investigator) prior to relocation and a 30-minute booster session after relocation. During each session the therapist attempted to teach subjects problem-solving skills along with basic anxiety coping skills via modeling, role playing, and therapeutic instruction and feedback. The training entailed five sequential phases: general orientation, problem

definition and formulation, generation of alternatives, decision making, and verification (D'Zurilla & Goldfried, 1971; Meichenbaum & Cameron, 1973).

General Orientation. First, the therapist explained the rationale of problem-solving training. The therapist then assisted the subject in producing a list of problem situations that had happened to him/her in the past and possible problems that might occur as a result of relocation. The therapist asked the subject to identify how he/she felt about the problems listed. The subject's specific reactions were also recorded on the list. The therapist expressed the need to recognize that when problem situations occur one's response should not be made automatically or impulsively. Relevant coping skills techniques were then presented and role played.

Problem Definition and Formulation. The subject was trained to define problems in a detailed manner in terms of environmental stimuli (antecedents and consequences), verbal self-statements, physiological (e.g., rapid heart rate, sweating) and behavioral responses (e.g., loss of sleep, hyperactivity). The subject was then asked to describe, in detail, all aspects of the problems noted on his/her problem list.

Generation of Alternatives. The subject was instructed to "brainstorm" all possible solutions to the problematic situation noted on their particular list. Osborn (1963) noted four basic rules for "brainstorming":

> (1) Criterion is ruled out. Adverse judgment of ideas must be withheld until later. (2) 'Free-wheeling' is welcomed. The wilder the ideas, the better; it is easier to tame down than to think up. (3) Quantity is wanted. The greater the number of ideas, the greater the likelihood of useful ideas. (4) Combination and improvement are sought. In addition to contributing ideas of their own, participants were asked how ideas of others can be turned into better ideas, or how two or more ideas can be joined into still another idea (p. 156).

Decision Making. The subject was instructed that he needed to decide the usefulness and possible consequences of each of the generated alternatives and then choose the alternative that seemed to have the highest utility and would maximize attainment of immediate and long term reinforcement.

Verification. During this final stage, the subject was instructed to actually implement (in vivo

and/or role playing) the previously chosen course of action (alternative). If after implementation, the subject decided that the problematic situation had been satisfactorily resolved then he/she could stop or exit from the problem-solving activities (Miller, Galanten, & Pribram, 1960). On the other hand, if the subject decided that the problems had not been resolved, he/she was instructed to return to the problem-solving strategy in the hope of generating a more effective solution.

After reviewing a few problematic situations that the subject had introduced, discussion focused on several problems that could occur as a result of the upcoming relocation. Subjects were assisted in going through all phases of the problem-solving and coping skills program as they related to possible relocation problems they identified or problems introduced by the therapist.

Control Groups (attention placebo controls)

One half of the high-functioning and one half of the low-functioning subjects were randomly placed in respective control groups. These subjects, in addition to their participation in the basic relocation preparatory program, were visited by volunteers (also Ciba-Geigy Corporation volunteers) on the days that the other subjects received either the

behavioral or verbal skills training. The volunteers spoke to the subjects about daily events at the facility (e.g., daily menus, activity room events, and TV programs). Conversation regarding relocation was minimized and only addressed when the topic was broached by the subject.

Experimental Design

The purpose of this study was to investigate the specific effects of relocation and to test the efficacy of two preparation treatment programs. In Experiment I the effects of relocation and the influence of a behavioral skills program with low-functioning subjects were examined. The design matrix is presented in Figure 1. The experimental conditions were defined by one between-subject variable (treatment) and one within-subject variable (blocks, consisting of six days each). The treatment variable contained two levels (treatment and control) and the block variable contained six levels (premove block 1 premove block 2, postmove block 1, postmove block 2, postmove block 3, and follow-up block 1). Ten subjects were randomly assigned to each group.

In Experiment II the effects of relocation and the influence of a verbal skills program with high-functioning subjects were examined. The design matrix is presented in

Figure 1

Design Matrix for Experiment I

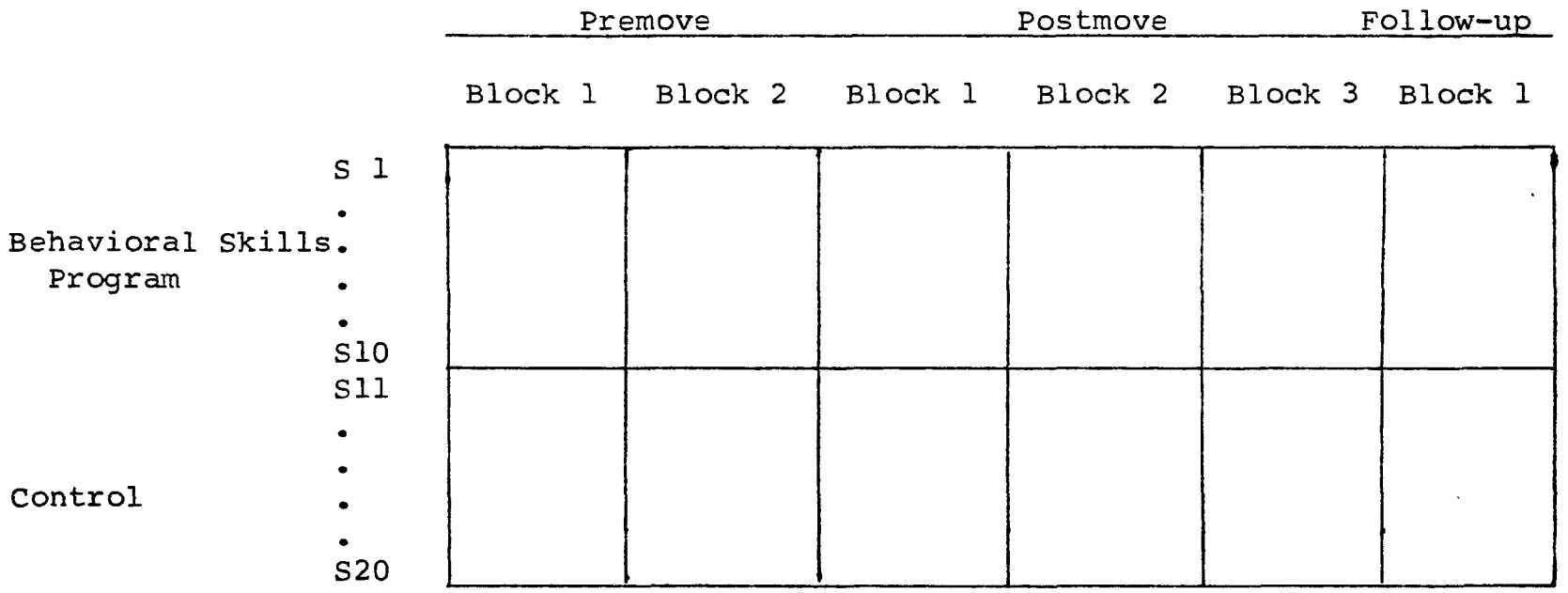
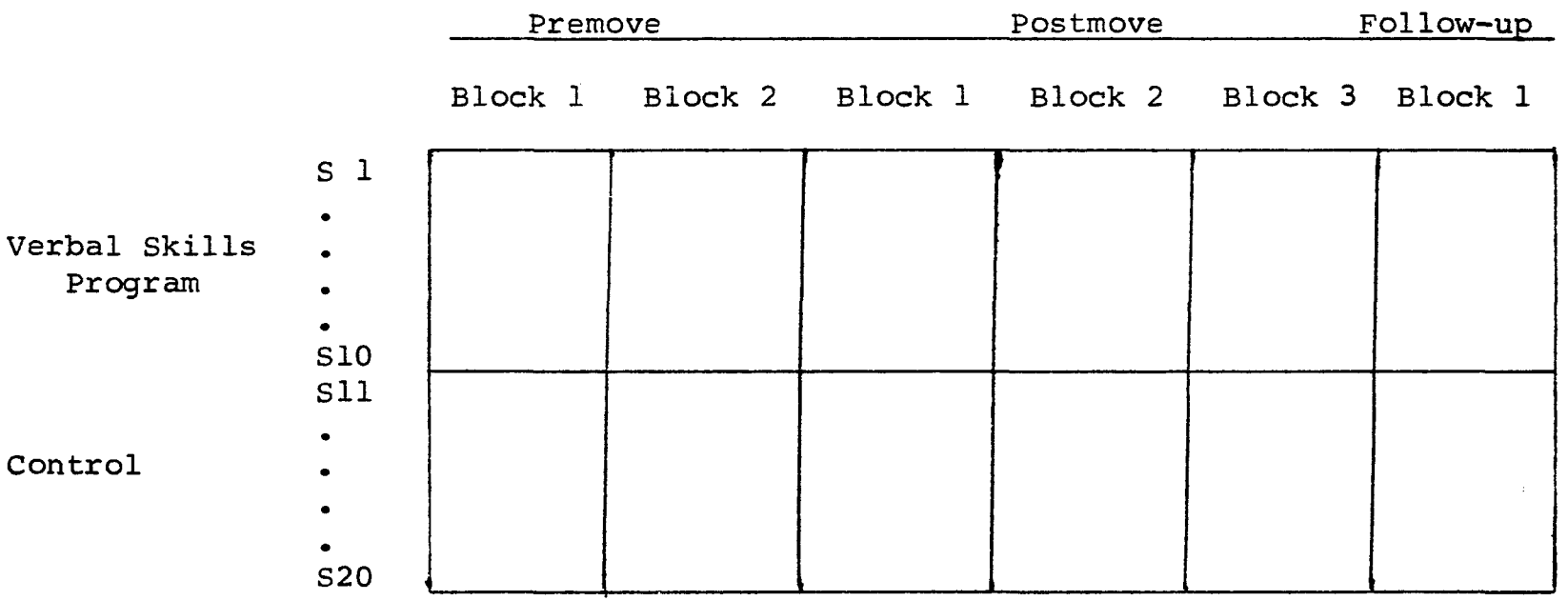


Figure 2. The experimental conditions were defined by one between-subject variable (treatment) and one within-subject variable (blocks, consisting of six days each). The treatment variable contained two levels (treatment and control) and the block variable contained six levels (premove block 1, premove block 2, postmove block 1, postmove block 2, postmove block 3, and follow-up block 1).

Figure 2

Design Matrix for Experiment II



CHAPTER III

RESULTS

Separate analyses were performed for each experiment. A total of 31 dependent variables was collected in each experiment; however, only 25 were submitted for analyses. One variable (eyelid position) was excluded due to poor interobserver reliability (see below); five variables (sounds, activity room, sitting, over 10 feet, and movement) were excluded since each was directly correlated with another variable and therefore, would supply only redundant information. For example, sounds was negatively correlated with silent; whenever subjects were making sounds they could not also be silent. Similarly, if subjects were sitting they could not also be standing or lying down.

For the purpose of analyzing the data, variables were grouped and then separate multivariate analyses of variance (MANOVAs) were computed for each of the three groups which were (1) the ten testing variables collected at the pre-, post-, and follow-up intervals; (2) the ten person variables examining the physical location, position, and

sound characteristics scored on the behavioral checklist; and (3) the five activity variables examining subject behaviors scored on the behavioral checklist. The specific variables in each group and their method of quantification are listed in Table 1.

The effects of relocation and treatment in Experiment I which examined low-functioning subjects and in Experiment II which examined high-functioning subjects are addressed separately. Data are discussed from two perspectives. Since there were pretreatment differences between groups, posttreatment variables were adjusted by computing change scores in order to evaluate the significance of the treatment effect (Huck & McLean, 1975). Change scores were computed (postmove change score = postmove score minus premove score; follow-up change score = follow-up score minus premove score) and then analyzed in terms of a MANOVA. To evaluate the significance of the relocation factor for the control group subjects, the within subject variable of blocks are discussed using the unadjusted data and the adjusted postmove and follow-up data.

Significant MANOVA results are discussed in terms of the specific dependent variables which proved significant.

Table 1

List of Dependent Variables

Variables	Quantification
Testing Variables	
Mental Status	# of errors; 10[a]
PGC Morale	# of positive responses; 22[b]
VIRO-Vigor	Total rating score; 6[b]
VIRO-Comfortable	Total rating score; 3[b]
VIRO-Intactness	Total rating score; 15[b]
VIRO-Relationship	Total rating score; 15[b]
Self-Maintenance (Nurse-Report)	Total rating score; 30[a]
Self-Maintenance (Self-Report)	Total rating score; 30[a]
Face-Hand Test	# of errors; 10[a]
Physical Performance	# of correct responses; 10[b]
Room Variables	
Own Room	Time[c] in subject's room
Hallway	Time in hallway or nursing station
Other Floor	Time on another floor or wing
Outside	Time outside of the facility
0-5 Feet	Time 0-5 feet from another person
6-10 Feet	Time 6-10 feet from another person
Alone	Time in a room alone
Lying	Time in the lying down position
Standing	Time in the standing position
Sounds	Time making sounds

See footnotes at end of table, p. 61.

Table 1- Continued

Variables	Quantification
Activity Variables	
Passive	Time in no overt activity
Individual	Time in activity without others
Interactive	Time in activity involving others
Grooming & Cleaning	Time in grooming or cleaning
Consumatory	Time in consumatory activity

[a]Maximum score possible; lower score is more favorable.
[b]Maximum score possible; higher score is more favorable.
[c]Time indicates the number of times the subject was observed engaging in or exhibiting the variable during observation over the total number of observations.

Variables with significant univariates but whose MANOVA was nonsignificant are also discussed. However, the reader should take caution when interpreting these results due to increased probability of Type I error.

Interobserver reliability was analyzed during pre-testing and periodically throughout the study (Appendix D, Tables 1 & 2). Reliability reached criteria (above 80% reliability during all reliability recording days) for all but the eyelid variable. Reliability for the eyelid position category on two days was 51.55 and 57.82. The poor reliability of this variable seemed to be related to the frequent inability of observers to see eyelid position without being obtrusive (resulting in frequent "can't determine" ratings). In addition, since some of the observers had better vision than other observers, when observing at a far distance, the observers with poorer vision indicated that they could not determine the eyelid position while the better sighted observers indicated they could. The eyelid position variable was eliminated due to its generally poor reliability.

Relocation Effects: Experiment I

Testing Variables

The MANOVA performed on the ten testing variables

(Appendix D, Tables 4, 5, 6 & 7) revealed a significant main effect for blocks but a nonsignificant treatment by block interaction. To identify the variables contributing the most to the significant block effects, univariate analyses of variance (ANOVAs) and Scheffé means comparisons were performed. For blocks, univariate tests were found to be significant for the mental status, VIRO-vigor, and self-maintenance (nurse-report) variables. Although scores on the mental status questionnaire at postmove were not significantly different from either the premove or follow-up scores, at follow-up, subjects made fewer errors on the questionnaire than during the premove. Self-maintenance (nurse-report) revealed that subjects improved at postmove but returned to premove levels by follow-up. Additionally, while subjects were less vigorous at the time of the post-move assessment, vigor returned to the premove level at the time of follow-up.

The MANOVA performed on the change scores (Appendix D, Tables 8, 9, 10 & 11) revealed a significant main effect for blocks but a nonsignificant treatment by block interaction. For blocks, change scores were found to be significant for the VIRO-vigor scale, and the self-maintenance (nurse-report). In comparison to premove VIRO-vigor scale

ratings, subjects were less vigorous during postmove than during follow-up. Compared to premove nurse-ratings of self-maintenance, subjects improved more at postmove than during follow-up.

Activity Variables

The MANOVA performed on the five activity variables (Appendix D, Tables 12, 13, 14 & 15) revealed a significant main effect for blocks but a nonsignificant treatment by block interaction. For the main effect of blocks, significant univariates were found for passive, interactive, grooming and cleaning, and consumatory activities. These univariates revealed that (1) subjects tended to become less passive during the block prior to and the block following relocation than during other blocks; (2) the frequency of interactive activity was lower during postmove and follow-up blocks than during premove blocks; (3) the frequency of grooming and cleaning activity decreased after postmove block 1; and (4) the frequency of consumatory activity was at its lowest level during postmove block 2 and follow-up.

Although the treatment by block interaction MANOVA reached only the .10 level of significance, two significant univariates emerged; passive and grooming and cleaning. Although the treatment group was more passive during

postmove block 1 than during any other block, the control group was less passive during both premove blocks and postmove block 1 than during subsequent blocks. In addition, while the treatment group maintained a fairly constant rate of involvement in grooming and cleaning activities, the control group showed a large decrease during postmove blocks 2 and 3 and follow-up compared to premove blocks and the postmove block 1.

The MANOVA performed on the change scores (Appendix D, Tables 16, 17, 18 & 19) revealed a significant main effect for blocks but a nonsignificant treatment by block interaction. For the main effect of blocks, the consumatory variable proved to be the only significant univariate, with subjects engaging in significantly less consumatory behavior during follow-up than during postmove blocks.

Person Variables

The MANOVA performed on the ten person variables (Appendix D, Tables 20, 21, 22 & 23) revealed a significant main effect for blocks and a significant treatment by block interaction. For the treatment by block interaction, eight univariates were found to be significant: own room, hallway, outside, 0-5 feet, alone, lying, standing, and sounds. Examination of these univariates revealed that

(1) own room ratings decreased after relocation for the treatment group but increased for the control group after postmove block 1; (2) hallway ratings increased after relocation for the treatment group but decreased for the control group at the postmove blocks; (3) 0-5 feet ratings increased after relocation for the treatment group but decreased for the control group after postmove block 1; (4) while alone ratings decreased after relocation for the treatment group, the control group exhibited a decrease at postmove block 1 and then an increase at follow-up; (5) while lying ratings for the treatment group decreased after relocation, the control group exhibited a small decrease at postmove block 1, which was followed by an increase; (6) although outside ratings decreased after relocation for both groups, at follow-up outside ratings for the treatment group increased while they remained the same for the control group; (7) while standing ratings at follow-up for the treatment group were higher than any other block, control group ratings were all similar; and (8) although both groups exhibited a decrease on sound ratings after relocation, the control group showed a greater decrease after postmove block 1.

The main effect for block revealed two additional significant univariates: other floor and 6-10 feet. Other floor ratings were highest at premove block 2 and lowest at postmove block 1 as compared to other blocks. 6-10 feet ratings were highest during postmove blocks 2 and 3 as compared to the other blocks.

The MANOVA performed on the change scores (Appendix D, Tables 24, 25, 26 & 27) revealed a significant main effect for blocks but a nonsignificant treatment by block interaction. The main effect of block revealed significant univariate effects for hallway, outside, 0-5 feet, and 6-10 feet. Compared to premove ratings, the frequency of (1) hallway ratings was higher at follow-up than at all postmove blocks; (2) outside ratings showed less of a decrease at follow-up than at all postmove blocks; (3) 0-5 feet ratings during postmove block 1 was higher than subsequent blocks; and (4) 6-10 feet ratings during postmove blocks 2 and 3 tended to be higher than during the postmove block 1 or follow-up.

Summary of Relocation Effects

The influence of relocation on low-functioning subjects was examined. Table 2 lists the direction and desirability of these changes. Analyses for the control

Table 2

Experiment I: Direction and Desirability of Change Following Relocation (Postmove and Follow-up) For Control Group Subjects

	Postmove			Follow-up
Variable	Block 1	Block 2	Block 3	Block 1
Mental Status***			D-F	D-F
PGC Morale Scale			I-F	I-F
VIRO-Vigor***			D-UF	D-UF
VIRO-Comfortable			D-UF	D-UF
VIRO-Intactness			D-UF	I-F
VIRO-Relationship			D-UF	D-UF
Self-Maintenance (Nurse-Report)***			D-F	I-UF
Self-Maintenance (Self-Report)			I-UF	I-UF
Face-Hand			I-UF	NC
Physical Performance			NC	NC
Passive***	I-UF	I-UF	I-UF	I-UF
Individual Activity	D-UF	D-UF	D-UF	D-UF
Interactive Activity***	D-UF	D-UF	D-UF	D-UF
Grooming & Cleaning***	D-UF	D-UF	D-UF	D-UF
Consumatory***	D	D	NC	D
Own Room***	D-F	I-UF	I-UF	I-UF
Hallway***	D-UF	D-UF	D-UF	NC
Other Floor	D-UF	D-UF	D-UF	D-UF
Outside***	D-UF	D-UF	D-UF	D-UF

See footnotes at end of table, p. 69 .

Table 2- Continued

	Postmove			Follow-up
Variable	Block 1	Block 2	Block 3	Block 1
0-5 Feet***	I-F	D-UF	D-UF	D-UF
6-10 Feet***	I-F	I-F	I-F	I-F
Alone*	D-F	D-F	I-UF	I-UF
Lying***	D-F	I-UF	I-UF	I-UF
Standing**	D-UF	D-UF	D-UF	D-UF
Sounds***	D-UF	D-UF	D-UF	D-UF

Note. I = Increase
D = Decrease
F = Favorable Change
UF = Unfavorable Change
NC = No Change

*$p < .050$
**$p < .025$
***$p < .010$

group revealed significant changes on three testing variables, four activity variables, and nine person variables. The testing variables revealed that control group subjects (1) were rated as less vigorous at the time of the postmove assessment interview (unfavorable change), but by follow-up, vigor ratings returned to the premove level; (2) performance on self-maintenance behavior as rated by the nursing staff, improved at postmove (favorable change) but returned to the premove level by follow-up; and (3) made fewer errors on the mental status questionnaire at follow-up than at premove (favorable change).

Activity variable changes for the control group included (1) a greater frequency of passive activities during postmove blocks 2 and 3 and follow-up (unfavorable change); (2) a decrease in the frequency of interactive activities after relocation (unfavorable change); (3) less consumatory activity at postmove block 2 and follow-up; and (4) less grooming and cleaning activity at postmove blocks 2 and 3 and follow-up than during any other blocks (unfavorable change).

The person variables revealed that control group subjects spent (1) more time in their own rooms after postmove block 1 (unfavorable change); (2) less time in the

hallway during the postmove blocks (unfavorable change); (3) less time outside the facility after relocation (unfavorable change); (4) the least time on other floors or wings at postmove block 1 (unfavorable change) and the most time on other floors or wings at premove block 2 (favorable change); (5) the least time alone at postmove block 1 (favorable change) followed by an increase at follow-up (unfavorable change); (6) less time close to others (0-5 feet) after postmove block 1 (unfavorable change); (7) the most time 6-10 feet from others at post-move blocks 2 and 3 (favorable change); (8) the least time lying down at postmove block 1 (favorable change) followed by an increase (unfavorable change);and (9) less time making sounds after relocation (unfavorable change).

Treatment Effects: Experiment I

Testing Variables

The MANOVA performed on the testing variables, using change scores (Appendix D, Tables 8, 10 & 11), revealed a significant main effect for treatment, but a nonsignificant treatment by block interaction. For treatment, univariate tests on the change scores were found to be significant only for the VIRO-comfortable scale. Compared to premove ratings, although the treatment group was rated as more

comfortable at the assessment interview after relocation, the control group was rated as less comfortable. Although the MANOVA for the treatment by block interaction on change scores reached only the .10 level of significance, two significant univariates emerged: VIRO-relationship scale and self-maintenance (self-report). Although both the treatment and control groups were rated lower on the VIRO-relationship scale after relocation, the treatment group ratings showed less of a decrease by follow-up than did control group ratings. In addition, whereas the treatment group reported similar self-maintenance ratings at postmove and follow-up, the control group rated their self-maintenance performance as more superior at postmove than at follow-up.

Activity Variables

The MANOVA performed on the activity variables, using change scores (Appendix D, Tables 16, 18 & 19), revealed a significant main effect for treatment but a nonsignificant treatment by block interaction. For treatment, univariate tests on the change scores were found to be significant for passive activity, individual activity, and grooming and cleaning activity. Relative to premove ratings, after relocation, the treatment group exhibited (1) a decrease

in the frequency of passive activities, compared to an increase for the control group; (2) an increase in the frequency of individual activities, compared to a decrease for the control group; and (3) less of a decrease in the frequency of grooming and cleaning activities than the control group.

Person Variables

The MANOVA performed on the person variables, using change scores (Appendix D, Tables 24, 26 & 27), revealed a significant main effect for treatment but a nonsignificant treatment by block interaction. For treatment, univariate tests on the change scores were found to be significant for own room, hallway, outside, 0-5 feet, 6-10 feet, alone, and lying. Compared to premove ratings, after relocation the treatment group exhibited (1) a decrease in the frequency of own room ratings, compared to an increase for the control group; (2) a greater decrease in the frequency of outside ratings than the control group; (3) a decrease in the frequency of alone ratings, compared to an increase for the control group; (4) a decrease in the frequency of lying ratings, compared to an increase for the control group; (5) an increase in the frequency of hallway ratings, compared to a decrease for

the control group; (6) an increase in the frequency of 0-5 feet ratings, compared to a decrease for the control group; and (7) less of an increase in the frequency of 6-10 feet ratings than the control group.

Summary of Treatment Effects

The influence of treatment on low-functioning subjects was examined. Table 3 lists the direction and desirability of these changes. Change score analyses revealed significant postrelocation differences between treatment and control group subjects on three testing variables, three activity variables, and seven person variables. Compared to premove ratings, subjects in the treatment group (1) were rated as being more comfortable during postrelocation assessment interviews (favorable change) while controls were rated as less comfortable; (2) exhibited less of a decline on the level and style of interacting at the follow-up assessment interview than did controls; and (3) showed less fluctuation on the postmove and follow-up self-maintenance (self-report) ratings than did controls.

On the activity variables, following relocation, the treatment group (1) spent less time engaging in passive activities (favorable change) while the control group spent more time engaging in passive activities; (2) spent more

Table 3

Experiment I: Direction and Desirability of Change Following Relocation (Postmove and Follow-up) Between Treatment and Control Group Subjects

Variable	Treatment	Control
Mental Status	D-F	D-F
PGC Morale Scale	NC	I-F
VIRO-Vigor	D-UF	D-UF
VIRO-Comfortable*	I-F	D-UF
VIRO-Intactness	D-UF	D-UF
VIRO-Relationship**	D-UF	D-UF
Self-Maintenance (Nurse-Report)	D-F	D-F
Self-Maintenance (Self-Report)*	I-UF	I-UF
Face-Hand	D-F	I-UF
Physical Performance	D-UF	NC
Passive***	D-F	I-UF
Individual Activity**	I-F	D-UF
Interactive Activity	D-UF	D-UF
Grooming & Cleaning***	D-UF	D-UF
Consumatory	D	D
Own Room***	D-F	I-UF
Hallway***	I-F	D-UF
Other Floor	D-UF	D-UF
Outside**	D-UF	D-UF
0-5 Feet***	I-F	D-UF
6-10 Feet**	I-F	I-F
Alone***	D-F	I-UF
Lying***	D-F	I-UF
Standing	I-F	D-UF
Sounds	D-UF	D-UF

Note. I = Increase; D = Decrease; F = Favorable Change; UF = Unfavorable Change; NC = No Change

*$p < .050$

**$p < .025$

***$p < .010$

time engaging in individual activities (favorable change) while the control group spent less time engaging in individual activities; and (3) exhibited less of a decline in time spent in grooming and cleaning activities than the control group. In addition, following relocation, the treatment group (1) spent less time in their own room (favorable change) while the control group spent more time in their own room; (2) exhibited a greater decrease in outside ratings (unfavorable change) as compared to the control group; (3) spent less time alone (favorable change) while the control group spent more time alone; (4) spent less time lying down (favorable change) while the control group spent more time lying down; (5) spent more time in the hallway (favorable change) while the control group spent less time in the hallway; (6) spent more time close to others (0-5 feet, favorable change) while the control group spent less time close to others; and (7) exhibited less of an increase in the amount of time spent 6-10 feet from others (unfavorable change) as compared to the control group.

Relocation Effect: Experiment II

Testing Variables

The MANOVA performed on the testing variables

(Appendix D, Tables 28, 29, 30 & 31) revealed nonsignificant effects for blocks and for the treatment by block interaction. The MANOVA performed on the change scores (Appendix D, Tables 32, 33, 34 & 35) also revealed nonsignificant effects for blocks and for the treatment by block interaction.

Activity Variables

The MANOVA performed on the activity variables (Appendix D, Tables 36, 37, 38 & 39) revealed a significant main effect for blocks but a nonsignificant treatment by block interaction. For blocks, individual activity was the only significant univariate. The frequency of individual activity increased at postmove block 1 and thereafter remained at premove levels. The MANOVA performed on the change scores (Appendix D, Tables 40, 41, 42 & 43) revealed nonsignificant effects for blocks and for the block by treatment interaction.

Person Variables

The MANOVA performed on the person variables (Appendix D, Tables 44, 45, 46 & 47) revealed significant main effects for blocks and for the treatment by block interaction. For the treatment by block interaction, the outside variable was the only significant univariate.

Although the treatment and control groups both exhibited decreases in time spent outside the facility after relocation, the treatment group showed less of a decline at follow-up than did the control group.

The main effect for block revealed eight additional significant univariates: own room, hallway, other floor, 0-5 feet, 6-10 feet, alone, standing, and sounds. Mean comparisons revealed that the frequency of (1) own room ratings at postmove block 1 were less than at all other blocks; (2) hallway ratings tended to increase after relocation; (3) other floor ratings tended to be less at postmove block 1 than at all other blocks; (4) 0-5 feet ratings were more at postmove block 1 than at all other blocks; (5) 6-10 feet ratings were more at postmove blocks 1 and 2 than at all other blocks; (6) alone ratings decreased after relocation; (7) standing ratings were less at premove block 1 and more at follow-up than at all other blocks; and (8) sound ratings decreased after relocation.

A MANOVA performed on the change scores (Appendix D, Tables 48, 49, 50 & 51) revealed a significant main effect for blocks but a nonsignificant treatment by block interaction. The main effect for blocks revealed significant univariate effects for the 6-10 feet, 0-5 feet, outside,

and hallway variables. Compared to premove ratings, the frequency of (1) 6-10 feet ratings during postmove blocks 2 and 3 increased more than during postmove block 1 and follow-up; (2) 0-5 feet ratings during postmove block 1 was larger than at all other blocks; (3) outside ratings during postmove block 1 was less than at follow-up; and (4) hallway ratings at follow-up were higher than at all other blocks.

Summary of Relocation Effects

The influence of relocation on high-functioning subjects was examined. Table 4 lists the direction and desirability of these changes. Analyses for the control group revealed significant changes on none of the testing variables, one of the activity variables, and nine of the person variables. The only significant activity variable revealed that the control group exhibited an increase in the frequency of individual activities (favorable change) at postmove block 1.

The person variables revealed that the control group spent (1) less time outside following relocation (unfavorable change) with the greatest decline at the postmove block 1 and the least decline at follow-up; (2) less time in their own room at the postmove block 1 (favorable

Table 4

Experiment II: Direction and Desirability of Change Following Relocation (Postmove and Follow-up) For Control Group Subjects

	Postmove			Follow-up
Variable	Block 1	Block 2	Block 3	Block 1
Mental Status			D-F	D-F
PGC Morale Scale			D-UF	D-UF
VIRO-Vigor			NC	I-F
VIRO-Comfortable			D-UF	D-UF
VIRO-Intactness			D-UF	D-UF
VIRO-Relationship			I-F	I-F
Self-Maintenance (Nurse-Report)			D-F	I-UF
Self-Maintenance (Self-Report)			I-UF	I-UF
Face-Hand			I-UF	I-UF
Physical Performance			NC	NC
Passive	D-F	D-F	D-F	D-F
Individual Activity***	I-F	D-UF	I-F	D-UF
Interactive Activity*	I-F	I-F	I-F	D-UF
Grooming & Cleaning	D-UF	D-UF	D-UF	D-UF
Consumatory	I	D	I	D
Own Room***	D-F	I-UF	D-F	D-F
Hallway	I-F	I-F	I-F	I-F
Other Floor**	D-UF	I-F	D-UF	D-UF
Outside***	D-UF	D-UF	D-UF	D-UF

See footnotes at end of table, p. 81.

Table 4- Continued

	Postmove			Follow-up
Variable	Block 1	Block 2	Block 3	Block 1
0-5 Feet***	I-F	I-F	I-F	I-F
6-10 Feet***	I-F	I-F	I-F	I-F
Alone***	D-F	D-F	D-F	D-F
Lying	D-F	I-UF	D-F	I-UF
Standing	D-UF	I-F	I-F	I-F
Sounds***	D-UF	D-UF	D-UF	D-UF

Note. I = Increase
D = Decrease
F = Favorable Change
UF = Unfavorable Change
NC = No Change

*$p < .050$
**$p < .025$
***$p < .010$

change); (3) more time in the hallway following relocation with the most significant increase at follow-up (favorable change); (4) less time on other floors or wings at postmove block 1 (unfavorable change); (5) more time close to others (0-5 feet) at postmove block 1 (favorable change); (6) more time 6-10 feet from others at postmove blocks 2 and 3 (favorable change); (7) less time alone following relocation (favorable change); (8) the least time standing at premove block 1 (unfavorable change), and the most at follow-up; and (9) less time making sounds following relocation (unfavorable change).

Treatment Effects: Experiment II

Testing Variables

The MANOVA performed on the testing variables, using change scores (Appendix D, Tables 32, 34 & 35), revealed a significant main effect for treatment but a nonsignificant treatment by block interaction. For treatment, univariate analyses on the change scores revealed a significant effect for only the VIRO-vigor scale. Compared to premove ratings, the treatment group was rated as less vigorous at the assessment interview after relocation, while the control group was rated as slightly more vigorous.

Activity Variables

The MANOVA performed on the activity variables, using change scores (Appendix D, Tables 40, 42 & 43), revealed a significant main effect for treatment but a nonsignificant treatment by block interaction. For the treatment effect, interactive activity was the only significant univariate. Relative to premove ratings, after relocation the treatment group exhibited a decrease in the frequency of interactive activities, while the control group exhibited an increase.

Person Variables

The MANOVA performed on the person variables, using change scores (Appendix D, Tables 48, 50 & 51), revealed a significant main effect for treatment but a nonsignificant treatment by block interaction. For treatment, univariate tests on the change scores were found to be significant for the hallway, outside, 6-10 feet, and sound variables. Compared to premove ratings, after relocation the treatment group exhibited (1) less of an increase in the frequency of hallway ratings; (2) a greater decrease in the frequency of outside ratings; (3) less of an increase in the frequency of 6-10 feet ratings; and (4) less of a decrease in the frequency of sound ratings than did the control group.

Summary of Treatment Effects

The influence of treatment on high-functioning subjects was examined. Table 5 lists the direction and desirability of these changes. Change score analyses revealed significant postrelocation differences between treatment and control group subjects on one testing variable, one activity variable and four person variables. Compared to premove ratings, after relocation treatment group subjects (1) were rated as being less vigorous during the postrelocation assessment interviews (unfavorable change) while the control group subjects were rated as being slightly more vigorous; (2) exhibited a decrease in the frequency of interactive activities (unfavorable change), compared to an increase by the control group; (3) exhibited less of an increase in the amount of time spent in the hallway (unfavorable change) as compared to the control group; (4) exhibited a greater decrease in the amount of time spent outside of the facility (unfavorable change) as compared to the control group; (5) exhibited less of an increase in the amount of time spent 6-10 feet from others (unfavorable change) as compared to the control group; and (6) exhibited less of a decrease in the amount of time spent making sounds (favorable change) as compared to the control group.

Table 5

Experiment II: Direction and Desirability of Change Following Relocation (Postmove and Follow-up) Between Treatment and Control Group Subjects

Variable	Treatment	Control
Mental Status	D-F	D-F
PGC Morale Scale	D-UF	D-UF
VIRO-Vigor*	D-UF	D-UF
VIRO-Comfortable	D-UF	D-UF
VIRO-Intactness	D-UF	D-UF
VIRO-Relationship	D-UF	I-F
Self-Maintenance (Nurse-Report)	I-UF	I-UF
Self-Maintenance (Self-Report)	I-UF	I-UF
Face-Hand	D-F	I-UF
Physical Performance	I-F	NC
Passive	D-F	D-F
Individual Activity	I-F	I-F
Interactive Activity***	D-UF	I-F
Grooming & Cleaning	D-UF	D-UF
Consumatory	D	D
Own Room	D-F	D-F
Hallway*	I-F	I-F
Other Floor	D-UF	D-UF
Outside**	D-UF	D-UF
0-5 Feet	I-F	I-F
6-10 Feet*	I-F	I-F
Alone	D-F	D-F
Lying	D-F	I-UF
Standing	I-F	I-F
Sounds*	D-UF	D-UF

Note. I = Increase; D = Decrease; F = Favorable Change; UF = Unfavorable Change; NC = No Change

*$p < .050$

**$p < .025$

***$p < .010$

Death and Discharge Analyses

The information concerning death and discharge rates was obtained from the Evergreens' medical records. Table 52 (Appendix D) summarizes the death rates by age and year for a six month time sample, comparable to the three months before and three months after relocation (March through August) for each year. Comparison of the six month totals from 1973 through 1978 revealed no significant differences between years for death totals. The total number of deaths recorded during the sample period before and after relocation was not significantly different from the previous five year totals.

Table 53 (Appendix D) summarizes the discharge rates by age and year for the six months comparable to the relocation period from 1973 through 1978. Examination of the discharge totals revealed a significant difference between years. Comparison of the means indicated that the total number of discharges in 1978 was significantly higher than the total number of discharges in any of the previous five years.

CHAPTER IV

DISCUSSION

Previous research attempts to delineate the effects of LECs have been of limited value due to methodological problems. To avoid the limitations of these studies, the present study focused specifically on one particular LEC, interinstitutional relocation of elderly. The review of the literature examining the effects of relocation revealed contradictory results and methodological limitations. The present study attempted to (1) clarify the influence of relocation on institutionalized elderly; and (2) examine the efficacy of two relocation preparatory training programs.

Relocation Effects

To examine the effects of interinstitutional relocation several measures were collected prior to, immediately after, and at three months following relocation. The discussion on the influence of relocation was based upon significant block effects unless a treatment by block interaction was present. When a treatment by block interaction was present, to avoid contaminating relocation

effects with treatment effects, the discussion was based upon the control group data. Contrary to the findings of several previous studies, none of the present subject population died within the three month follow-up period. However, as hypothesized, several less dramatic postrelocation changes occurred.

Experiment I

The influence of relocation on low-functioning subjects was examined. Control group subjects exhibited no change on eight dependent measures, favorable change on three dependent measures, and unfavorable change on 13 dependent measures. Overall, the pattern of observed changes was consistent with the hypotheses; following relocation, subjects exhibited a general withdrawal from active behaviors as well as an increase in passive behaviors. Specifically, among the activity variables, as predicted, subjects exhibited an increase in the frequency of passive behaviors and a decrease in the frequency of interactive behaviors. By follow-up, the frequency of both passive and interactive behaviors returned to premove levels. This was consistent with the Lawton et al. (1976) finding that relocated patients showed a reduction in the frequency of social activities along with an increase in

passive behavior during the two-week period following relocation (Lawton et al., however, did not report follow-up data). In the present study, subjects also exhibited a significant decrease in grooming and cleaning activities after the first postmove block. This was dissimilar to the Lawton et al. study which indicated an increase in the frequency of instrumental behaviors (noted as primarily grooming, housekeeping, washing and tidying clothes) among transferred patients. However, since these authors examined the total behavior change which occurred during the two-week period following relocation it is not possible to determine, for example, if the subjects exhibited an increase in instrumental behavior during both weeks, or in agreement with the present study, a decrease only during the second week.

Several person variables also reflected an increase in passivity and withdrawal following relocation. Subjects spent more time in their room, but less time in the hallway, on the floors or wings other than their own, and outside the facility. The decrease in time spent in the hallway and floors or wings other than their own returned to premove levels by follow-up. Regarding proximity, subjects spent less time close to (0-5 feet) and more time

moderately close to (6-10 feet) the other residents. In addition, subjects spent more time by themselves at follow-up than during any other block. Concerning body position, after relocation subjects spent more time in the lying down position and less time standing upright; but by follow-up these returned to premove levels. After relocation, subjects also made fewer sounds.

Interestingly, several of the postrelocation changes (passive, grooming and cleaning, own room, 0-5 feet, 6-10 feet, lying down, and sounds) did not occur immediately following relocation but rather occurred during the second postrelocation week. Cochran, Sran, and Varano (1977) also noted a postmove delay of about one week after relocation before behavior change occurred. Earlier, it was hypothesized that immediately following relocation, at which time the subject is faced with the highest level of anxiety (resulting from exposure to novel stimuli and loss of old stimuli), the most significant behavior changes would take place (reflecting a general withdrawal from stimulation). However, these changes were not reflected until the second postrelocation week. Two explanations are offered to account for the apparent delay. First, it is possible that the degree of anxiety resulting from

exposure to novel stimuli and loss of old stimuli simply did not reach an influential level until the second week after relocation. In congruence with this post hoc explanation, Epstein (1967) postulated a relationship between inhibition and excitation, to account for the finding that individuals often perform adequately during a crisis with few signs of increased anxiety, but later during a postcrisis period, exhibit profuse behavior change reflecting an increase in anxiety. The author noted that:

> Given a rapid buildup of excitation, such as can be produced by the repetition of a moderately strong stimulus with a very brief interstimulus interval, inhibition must build up yet more rapidly in order to overtake excitation. As a result, with a rapid rate of stimulus input, so long as it is not overwhelming, there can only be a brief interval during which excitation exceeds inhibition.
>
> During the crisis, inhibition remains greater than excitation. After the crisis, both gradually fall off, with inhibition falling off more rapidly. As a result of the slow rate of decrease, the period during which excitation

exceeds inhibition is much greater postcrisis than precrisis (p. 59).

A second explanation emphasizes the subject's ability to respond adaptively to the new environment (e.g., postmove behavioral control of reinforcements) rather than their reaction to novel stimuli and loss of old stimuli. Since all subjects in the present study received some premove preparation, they may have been able to cope well with the initial components of relocation, dealing adequately with the exposure to novel stimuli and a loss of old stimuli. However, since these subjects did not receive skills training to help them manage the new environment in such a manner as to obtain premove reinforcement levels, significant postmove behavior change may have occurred. These changes would not necessarily become apparent immediately following relocation, but rather after the subject begins to test his behavioral control in the new environment (e.g., attempts to go to a neighborhood store or locate a friend).

Several variables failed to reflect postrelocation changes. Stable performance on the Face-Hand Test and the Physical Performance Scale suggested little physiological deterioration as a result of relocation. Nonsignificant

postrelocation change in attitudes, assessed by the PGC morale scale, is in agreement with Smith, Oswald, and Faruki's (1976) finding that subject life satisfaction, as assessed by the Life Satisfaction Scale did not change as a result of relocation. Patient behaviors during their assessment interview, assessed by the VIRO scale, revealed postrelocation changes on only the vigor subscale. Vigorous rating, which declined after relocation but returned to premove levels at follow-up, corresponded to the behavioral observations of increased passivity. The comfortable, interactive, and relationship subscale ratings did not change following relocation.

The self-maintenance and mental status variables revealed unexpected results. First, although subject's self-report of their self-maintenance performance showed no postrelocation changes, subjects were rated by the nursing staff as most proficient at performing self-maintenance behaviors immediately after relocation. Performance on the self-maintenance (nurse-report) returned to premove levels by follow-up. Earlier, it was hypothesized that performance on self-maintenance tasks would deteriorate after relocation as a reflection of an increase in passive behaviors, withdrawal from excessive stimulation and loss

of behavioral control (e.g., inability to locate shower or clothing, or loss of stimulus cues which signal potential reinforcement for performing tasks). One explanation for the unexpected improvement rather than decline in self-maintenance is related to the level of stimulation acquired as a result of the patient's level of self-maintenance performance. Observation of prerelocation institutional routines revealed that patients who performed self-maintenance behaviors adequately received less staff attention (and consequently less stimulation) than those who seemed unable to perform adequately. For example, patients who appeared as though they could not eat by themselves were attended by staff members who fed, sat close, and talked to them at meal times, whereas patients who fed themselves were left alone at meal times. Improved self-maintenance performance, therefore, would eventuate less staff attention. Consequently, patients who exhibited poor prerelocation self-maintenance behaviors, in an attempt to gain attention from staff, may have exhibited improvement on self-maintenance behavior after relocation since such staff attention was no longer reinforcing (e.g., due to increased stimulation resulting from the move, attention from staff may become less reinforcing or

even aversive). Further investigation of the influence of increased stimulation on performance of self-maintenance behavior may be quite useful. If a simple reduction of institutional staff attention, from focusing primarily on self-maintenance behavior (reinforcing the patient for performing poorly) to providing stimulation for more appropriate behavior, proves effective, institutional care would improve without additional program cost (total amount of staff time expended would not change).

Postrelocation improvement on the self-maintenance behaviors, on the other hand, may have occurred as a result of changes in staff behavior patterns; specifically, the amount of time staff had to work with patients decreased after relocation due to special staff relocation work responsibilities. Since staff had less available time to assist patients on self-maintenance tasks it was necessary for patients to do for themselves. By follow-up, when staff were back to their prerelocation routines, self-maintenance scale ratings also returned to premove levels. Since staff behavior patterns were not examined in the present study, this hypothesis needs further verification. In one of the few studies examining staff behavior, Lawton et al. found that staff proximity during

intrainstitutional room transfer paralleled that of the patients, suggesting that staff tended to be where residents needed them. However, since staff-patient interactive behavior patterns were not examined, the relationship between staff and patient behaviors during relocation remains unexplored.

Subject performance on the mental status questionnaire showed no change after relocation but improvement by follow-up. Findings by Pino, Rosica, and Carter (1978) suggesting a slight decline in mental status, and Miller and Lieberman's (1965) indication of increased confusion and memory deficits (components of mental status) among relocated individuals, were not confirmed. It was hypothesized earlier that as a reaction to an increase in arousal (due to increased stimulation) and loss of behavioral control, subjects would tend to exhibit a decline in intellectual functioning (due to an increase in disorientation and confusion). Two post hoc explanations for the unpredicted increase in mental status performance at follow-up are offered. First, the level of care and/or level of sensory stimulation offered by the new facility may have been superior to that of the old facility. After adjusting to the initial effects of relocation, subjects

improved as a response to the beneficial aspects of the new environment. In related investigations, patients previously living in an inadequate care and/or sensory deprived environment, exhibited improvement in intellectual functioning when exposed to intensified stimulation (Loew & Silverstone, 1971; Oster, 1976). Assuming the premove environment did not offer optimal level of sensory stimulation and/or care, the additional stimulation and care resulting from relocation may have had a beneficial effect. However, mental status improvement may have resulted simply from the regression toward the mean phenomenon. Since subjects in Experiment I were preselected in accordance to their high scores on the mental status questionnaire, improvement at follow-up testing may be a function of the statistical tendency for the group mean to fall relatively nearer to the population mean.

Experiment II

The influence of relocation on high-functioning subjects was examined. Control group subjects exhibited no change on 15 dependent variables, favorable change on seven dependent variables, and unfavorable change on only three dependent variables. Regarding favorable changes, compared to premove levels, the time subjects spent

(1) engaging in individual activities increased during the first postmove block; (2) standing was highest at follow-up and least at the first premove block;(3) in the bedroom decreased during the first postmove block; (4) in the hallway increased during the first postmove block; (5) close to others (0-5 feet) increased during the first postmove block; (6) moderately close to others (6-10 feet) increased during postmove blocks two and three; and (7) alone decreased. Unfavorable changes included a general decrease in time spent outside, on another floor or wing, or making sounds. No observable changes were found for all the testing variables, the lying down position, passive, interactive, grooming and cleaning, and consumatory activities. Contrary to earlier predictions, postrelocation behavior ratings of these subjects did not reflect a general increase in passivity or withdrawal. In fact, following relocation several variables reflected a general decrease in withdrawal and passivity (e.g., the amount of time subjects spent in their bedroom decreased, in the hallway increased, close to others increased, alone decreased and engaging in individual activities increased).

Relocation appeared to have differential effects on the low-functioning subject (low mental status scores) and

high-functioning subject groups (higher mental status scores). Whereas lower functioning subject groups exhibited a general increase in passive-withdrawn type behavior following relocation, higher functioning subjects exhibited more active-outgoing type behavior. Previous research examining postrelocation mortality rates also noted that patients exhibiting poor mental status faired more poorly (higher mortality rate) than patients assessed as having higher mental status (e.g., Goldfarb, Shahinian, and Burr, 1972; Markus, Blenkner, Bloom, & Downs, 1971, 1972). Goldfarb, Fisch, and Gerber (1966) suggested that organicity (physical functioning and brain damage) directly accounted for the negative postrelocation responses found among patients with low mental status. In the present study, although those subjects with low mental status (control group subjects) did fare more poorly as a result of relocation, the finding that those exposed to a preparatory training program (treatment group subjects) did as well as subjects with higher mental status, suggests that coping and/or behavioral skills (training components) and not necessarily organicity are the controlling factors that determine the effects of relocation (discussed further below).

Both low and high functioning subject groups exhibited a postrelocation decline in the time spent outside the facility and on another floor or wing. This general decline does not appear to be related to relocation per se but rather to a change in the subject's general access to these extramural areas. For example, whereas in the old facility subjects needed only to walk about 20 feet from their day room to be outside, in the new facility subjects needed to either walk down three flights of stairs or take an elevator and then walk at least 100 feet to the outside. Both groups of subjects also exhibited a significant postrelocation decline in the time spent making sounds. This may have been a function of the increased stimulation offered by the new facility. Whereas in the old facility the lack of stimulation may have lead to a need for self-stimulation (e.g., singing, talking), the new facility may have offered adequate external stimulation which limited the need for self-stimulation.

Overall, the effects of relocation on low and high functioning subjects were reflected on the behavioral checklist measures. As mentioned earlier, relocation generally did not appear to have a substantial effect on several of the testing variables such as the Physical

Performance Scale, Face-Hand Test, and PGC morale scale. The difference between the behavioral checklist measures and the testing variables may be a function of the more enduring nature of several of the testing variables; performance on these scales may not have been sensitive enough to detect the immediate effects of relocation (within the three-month period of testing). For instance, over a longer period of time (e.g., six-month follow-up), if the control group subjects continued to show an increase in passive-withdrawn type behaviors, the testing variables may have reflected a change.

Death and discharge rates were also examined. None of the experimental subjects died during the study and none were permanently discharged from the institution. Examination of the death rate for the entire institutional population, before and after relocation, revealed that relocation did not escalate the number of deaths (in agreement with Borup, Gallego & Heffernan, 1979). The institutional discharge rate, however, increased significantly after relocation. Since specific information regarding the substance of these discharges was not available to the present investigator, the implications of this finding are unclear. Future studies examining the effects

of relocation should investigate, in detail, relocation discharges and consider such information in outcome data.

In the present study the influence of relocation was certainly not as dramatic or devastating as reported by several previous investigations (e.g., Aldrich & Mendkoff, 1963; Killian, 1970). No deaths among subjects occurred and even performance on a number of the testing variables did not significantly change as a result of relocation. The effect of relocation may have been tempered by the basic relocation preparatory program offered to all subjects. Therefore, it must be cautioned that in the present study the effects of relocation were coupled with the basic relocation preparatory program. Generalization of the results to a population that has not received similar relocation preparation is not appropriate. Finally, since a comparison group of nonrelocated subjects was not utilized, the possibility that the postrelocation changes found in the present study were due to extraneous variables rather than relocation, cannot be ruled out. Although the role of extraneous variables appears highly unlikely, in future studies it should be controlled for (e.g., utilizing a multiple baseline design across subjects).

Treatment Effects

The second aim of the present study was to examine the efficacy of two treatment strategies designed to minimize the negative effects of relocation.

Experiment I

The influence of the behavioral skills training program on low-functioning subjects was examined. Overall, following relocation subjects in the behavioral skills program performed (relative to premove performance) more favorably than control group subjects on ten dependent measures, similarly on 13 dependent measures, and less favorably on two dependent measures. Treatment group subjects, as compared to control group subjects, exhibited the following more favorable postrelocation changes: (1) were rated as more comfortable during their assessment interviews; (2) showed less of a decline on the level and style of interacting at the follow-up assessment interview; (3) decrease in time spent engaged in passive activity; (4) increase in time spent engaged in individual activity; (5) less of a decrease in time spent engaged in grooming and cleaning activity; (6) decrease in time spent in their own room; (7) increase in time spent in the hallway; (8) decrease in time spent alone; (9) decrease in time spent

lying down; and (10) increase in time spent close to others (0-5 feet). Unfavorable changes included a greater decrease in time spent outside and less of an increase in time spent moderately close to others (6-10 feet).

The behavioral skills program seemed to be effective in not only limiting the tendency for relocated patients to exhibit a general withdrawal from activity and an increase in the frequency of passive type behaviors, but also improving behavior ratings even beyond premove levels. For example, following relocation treatment subjects exhibited a substantial decrease in the frequency of passive, own room, alone, and lying down behaviors.

Although the behavioral skills program appeared to minimize the negative effects of relocation, it is not possible to delineate the effective components of the program. As noted earlier, the three-stage organizational model predicts that the effects of relocation will depend upon an individual's ability to (1) cope with initial arousal resulting from exposure to novel stimuli; (2) cope with reinforcements and discriminative stimuli changes; and (3) adaptively respond to the postrelocation environment. The behavioral skills program had essentially two treatment components. First, through the use of gradual

exposure to novel stimuli and loss of old stimuli, it was designed to minimize the initial effects of exposure to novel stimuli and loss of old stimuli. Second, skills training was designed to increase the subject's ability to respond to the postrelocation environment in an adaptive manner. Since both these treatment components were included in the behavioral skills program one cannot determine the extent to which each contributed to the observed treatment effect. Further component analysis is necessary to delineate the most significant elements of the organizational model and thereby determine the most cost efficient and effective program.

Experiment II

The influence of the verbal skills training program on high-functioning subjects was examined. Overall, subjects in the verbal skills program, following relocation, performed (relative to premove performance) more favorably than control group subjects on one dependent measure, similarly on 19 dependent measures, and less favorably on five dependent measures. Sound ratings, the only more favorable postrelocation change, revealed that treatment group subjects showed less of a postrelocation decrease in time spent making sounds as compared to control group

subjects. Treatment group subjects, as compared to control group subjects, exhibited the following more unfavorable postrelocation changes: (1) were rated as less vigorous during their assessment interviews; (2) a decrease in time spent engaged in interactive activity; (3) less of an increase in time spent in the hallway; (4) greater decrease in time spent outside; and (5) less of an increase in time spent moderately close to others (6-10 feet).

The verbal skills program was based on the assumptions that (1) subjects did not have adequate skills to deal with stress and problems resulting from relocation; and (2) if they received training on these skills they would be able to use them after relocation. However, the verbal skills program was apparently not beneficial for subjects. Three explanations are offered to account for the ineffectiveness of the verbal skills program. First and foremost, as noted earlier, the influence of relocation on high-functioning subjects was minimal. Obviously, if these subjects were able to handle the stress and problems resulting from relocation without the help of training (control group), the influence of training would not be substantial. Secondly, as it has recently been noted in the social skills

training literature (e.g., Schwartz & Gottman, 1976), a major distinction exists between (1) having access to certain skills and (2) using the skills when they are needed. In the present study, although the treatment group subjects exhibited greater proficiency on the coping and problem-solving training tasks after training (according to premove role-playing assessment), when these subjects were placed in the postrelocation environment, in which they were confronted with the stress and problems of relocation, they may not have been able to put the training to work. For example, under low anxiety (during treatment sessions prior to relocation) the skills were performed adequately, but under high anxiety (immediately following relocation) they were not utilized by the subject. This explanation is, however, being considered in a post hoc manner and is open to further empirical verification.

Thirdly, the poor outcome for the verbal skills training may be related to the mental status of the subject population. As mentioned earlier, subjects were preselected, according to their performance on the mental status questionnaire, into either the behavioral or verbal skills program. No impairment to only minimal impairment of intellectual functioning was deemed necessary to facilitate

generalization of verbal skills training to the postrelocation environment. However, although subjects in the high-functioning group scored significantly better on the mental status questionnaire ($\underline{M}$=4.85) than did low-functioning subjects ($\underline{M}$=8.55), the high-functioning group mean still fell between the mild ($\underline{M}$=3.50) and the moderate intellectual impairment categories ($\underline{M}$=6.00). Therefore, it is possible that the high-functioning group's intellectual functioning was not sufficient enough for them to profit from the verbal skills program. In fact, the generally poor postrelocation performance of the treatment group, as compared to the control group, may be an indication that the verbal skills program was a negative experience for the subjects (e.g., they may have been overwhelmed by the treatment procedures). The need to fit a subject population with the most appropriate treatment method is indeed crucial.

In summary, the influence of relocation of institutionalized elderly proved to be less dramatic than espoused by several earlier investigations. The effects may have been tempered by the basic preparatory relocation program given to all subjects. As hypothesized, low-functioning subjects exhibited an increase in passive-withdrawn

behaviors following relocation. High-functioning subjects, however, unexpectedly tended to exhibit an increase in active-outgoing type behavior following relocation. The present study offers a plausible paradigm for further study of the effects of relocation as well as other life event changes. Further examination and refinement of the LEC organizational model may prove useful in guiding subsequent research.

The influence of the relocation preparatory training programs derived from the LEC organizational model was varied. Although the verbal skills program did not significantly influence postrelocation behavior of high-functioning subjects, the behavioral skills program led to significantly more favorable postrelocation changes among the low-functioning subjects. Further investigation on the efficacy of the behavioral and verbal skills training programs to reduce the negative influence of relocation and other LECs is needed.

CHAPTER V

SUMMARY

Individuals previously exposed to a high frequency of stressful LECs have been reported to have a high incidence of physiological and psychological problems, and a higher incidence of problems as compared to individuals exposed to few stressful LECs. However, research examining these issues has methodological problems. In an attempt to examine the effects of a LEC in an experimentally controlled manner, the present investigator focused on one specific LEC, interinstitutional relocation of elderly.

A review of the literature examining the effects of relocation on the elderly revealed frequent inconsistencies among the studies, which were further confounded by methodological difficulties. The first aim of the present study was to collect a data base (verbal, behavioral, and physiological indices) prior to and after relocation, in an effort to determine exactly what changes occur as a result of relocation. Secondly, the influence of two preparatory training programs on the effects of relocation was examined.

Forty subjects were assessed on several measures prior to, immediately after, and again at three months following relocation. Subjects were preselected, according to their scores on a mental status questionnaire, into either the low-functioning or the high-functioning group. In Experiment I, half (n=10) of the low-functioning group subjects participated in a behavioral program, which consisted of graduated exposure to postmove environmental stimuli and behavioral response training, plus a basic relocation preparatory program; while the remaining half received only a basic preparatory program. In Experiment II, half (n=10) of the high-functioning group subjects participated in a verbal program, which consisted of coping skills and problem-solving skills training, plus a basic relocation preparatory program, while the remaining half received only a basic preparatory program.

Hypotheses were based upon an organizational model which summarized the potential effects of a LEC into three stages. The influence of relocation of institutionalized elderly in the present study proved to be less dramatic than espoused by several earlier investigations. As hypothesized, low-functioning subjects exhibited an increase in passive-withdrawn behaviors following relocation. High-

functioning subjects, however, unexpectedly tended to exhibit an increase in active-outgoing behavior following relocation. The present study offers a plausible paradigm for further study of the effects of relocation and other LECs in an experimentally controlled manner. The influence of the relocation preparatory training programs was varied. Although the verbal skills program did not significantly influence postrelocation behavior of high-functioning subjects, the behavioral skills program led to significantly favorable postrelocation changes among the low-functioning subjects. Further investigation regarding the efficacy of the behavioral and verbal skills training program to reduce the negative influence of relocation and other LECs is needed.

NOTES

1. Life event change refers to any situation in which certain events "disrupt or threaten to disrupt the individual's usual activities" (Dohrenwend & Dohrenwend, 1970, p. 115); an alteration of environmental stimuli which results in a change in a person's established behavior pattern.

2. Anxiety or stress refers to a complex and variable pattern of behavior which occurs when an individual is exposed to a threatening stimulus. It may be exhibited and/or assessed through verbal (self-report), physiological (e.g., galvanic skin response, heart rate, blood pressure) and/or motor behavior (trembling, stuttering). These response modes, however, frequently do not correlate well with each other (Lacey, 1959; Lang, 1968). In the majority of studies reviewed in the present paper, assessment of anxiety is limited solely to self-report measures.

3. Arousal refers to a complex and variable pattern of behaviors which occurs when an individual is exposed to a change in his/her environment. Unlike anxiety or fear, arousal is not limited to exposure to threatening

stimuli but may also refer to exposure to novel non-threatening stimuli (Epstein, 1967). Arousal may be exhibited and/or assessed via verbal, physiological, and/or motor behavior.

4. Cope refers to strategies used to deal with increases in arousal or changes in the environment. Strategies may involve, for example, social supports, material resources, morale, problem-solving skills, or personal belief systems (Roskies & Lazarus, 1980).

5. During interobserver scoring reliability, two interviewers were present during the interview. Only one of the interviewers actually conducted the interview, but both interviewers scored the task. Reliability data are presented in Table 2, Appendix D.

6. Actual days of observation varied since some subjects were relocated earlier than the majority of the subjects. For data analysis, however, equal number of days of recording were used for all subjects.

7. When subjects were observed engaging in two or more activities at the same time (e.g., smoking, walking, and talking), all activities were recorded.

8. Several procedures which have been suggested as useful in reducing negative effects of relocation, however,

were not used due to the refusal of the Evergreens' administrative staff and time restraint. For example, subjects were not able to participate in room or roommate selection or any planning of the new facility. They also were not given control over the date or time of their move. In fact, the date of relocation was changed three times without prior notification to the subjects.

9. The previsits to the new facility were conducted on a voluntary basis. One subject in this group refused to attend either visit. Another subject attended the first previsit but refused to attend the second visit. All remaining subjects attended both visits.

10. The postmove individual sessions with the investigator were also offered on a voluntary basis to the subjects. Two subjects refused to participate in the sessions (the same subjects who refused previsits).

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APPENDIXES

APPENDIX A

Relocation Literature Review

The literature regarding the effects of institution relocation will be organized in terms of the primary dependent variable examined by each investigation. These dependent variables include (1) mortality rates, (2) physiological measures (other than mortality), and (3) behavioral measures.

Mortality Rate

For many relocation studies, focusing on elderly populations, mortality rate has been the most frequently investigated dependent variable (Kral, Grad & Berenson, 1968; Lieberman, 1969; Schultz & Brenner, 1977). These studies have compared (1) the mortality rates of transferred individuals and nontransferred individuals (Bourestom & Tars, 1974; Goldfarb, Shahinian & Burr, 1972; Killian, 1970; Markson & Cummings, 1974; Wittels & Botwinick, 1974); (2) institutional mortality rates before and after relocation (Aldrich & Mendkoff, 1963; Gutman & Herbert, 1976; Jasnau, 1967; Markus, Blenkner, Bloom & Downs, 1971, 1972; Zweig & Csank, 1975); and (3) relocation survivors and nonsurvivors (Aldrich & Mendkoff, 1963; Killian, 1970;

Markus et al., 1972; Miller & Lieberman, 1965; Turner, Tobin & Lieberman, 1972).

Killian (1970), in a frequently cited study, matched a group of geriatric psychiatric patients transferred either to other state hospitals or extramural facilities (e.g., nursing, boarding, or guest homes), with nontransferred patients on the basis of age, race, sex, psychiatric diagnosis, ambulation, and length of hospitalization. Killian found that during the four months following the relocation, the mortality rate of patients moved to state hospitals was five times greater than their matched nontransferred controls, and the mortality rate of patients transferred to extramural facilities was nine times greater than their nontransferred controls. Although Killian noted ambulation as significantly related to postmove mortality (27% of the nonambulatory patients died during the four months following relocation), the effects of sex, race, organic and functional diagnosis, and length of hospitalization variables on mortality rate were not significant. Similarly, Bourestom and Tars (1974) found that elderly subjects who were faced with either moderate or radical degrees of environmental change as a result of relocation had higher mortality rates as compared to nonrelocated

controls. In addition, they found that subjects who were exposed to radical degrees of environmental change as a result of relocation had higher postrelocation mortality rates than those exposed to moderate changes.

In contrast, Goldfarb, Shahinian, and Burr (1972) found no significant difference in mortality rates between relocated and nonrelocated nursing home residents. However, the authors noted, when compared to matched control groups relocated patients with severe brain syndrome (as measured by a psychiatric examination and a mental status questionnaire) and those with considerable physical functional impairment (as measured by a physical examination and motor performance) had the highest postrelocation mortality rate; whereas, patients who were functioning well physically were not adversely affected and may have benefited by transfer. Similarly, Markson and Cummings (1974) found equal mortality rates between a relocated chronic psychiatric population and a similar nonrelocated community hospital group. These authors also studied the influence of an active versus inactive relocation environment on mortality. An active environment was defined as an environment in which patients were involved in decision making and wards in which three or more patients were moved in or

out over a three month period for reasons other than death. Mortality rates among those sent to an active environment and those sent to an inactive environment were similar.

In all the studies reviewed, thus far, comparison group members (transferred versus nontransferred subjects) have not been selected randomly. In fact, transferred and nontransferred individuals have been frequently pre-selected. For example, Markson and Cummings (1974), after selecting those patients to be transferred, eliminated a group of patients because they were "too old, too sick, or too feeble to be moved" (p. 317). Killian (1970), even though he matched his controls according to six variables, selected patients for transfer either according to their residential location prior to institutional commitment, lack of family or social contacts, or requests from relatives. It is therefore possible, that changes in mortality rate, in both these studies, were a function of preselection criteria rather than relocation.

Comparing mortality rates before and after a move is a second method used to determine the effects of relocation. Aldrich and Mendkoff (1963), in the most frequently cited relocation study, compared the observed mortality rate after relocation with anticipated mortality rate (based

on the institutional death rates for the 10-year period prior to relocation), for nursing home patients who were relocated to other nursing homes of comparative or better quality when their home was closed down for administrative reasons. The authors reported that the anticipated mortality rate (19%) was significantly less than the rate during the three month period following relocation (32%). Jasnau (1967), comparing the death rates for the six months prior to relocation and six months after relocation of hospitalized geriatric patients found that the death rate increased 35% during the postmove period. However, Jasnau found that patients exposed to individualized relocation preparatory training had a somewhat lower than expected mortality rate, while a no-training group had an increased mortality rate following relocation. Markus et al. (1971), comparing the mortality rate of relocated elderly during the six months after relocation with pre-relocation mortality rates, used a somewhat more conservative criterion for significance. The authors noted that in order to control for yearly fluctuations of institutional mortality rates, for the comparison to be considered significantly different, the death rates after relocation had to be greater or smaller than the death rates in 14 of

the 15 prior years. Using this criterion, the authors found a significant increase in mortality rates after relocation for persons admitted to the new facility under age 75, but a significant decrease in mortality rate for females admitted to the new facility over age 80. No other differences were found to be significant.

Also comparing prerelocation and postrelocation mortality rates, several researchers report no change or even a decrease in mortality rates following relocation (Gutman & Herbert, 1976; Novick, 1967; Zweig & Csank, 1975). Gutman and Herbert (1976), examining the effects of relocation (necessitated by the planned demolition of the housing building) on a group of extended care male patients, found that the death rate during the first year following relocation (33%) was not significantly different from the anticipated death rate (41%, based on the five years preceding the move). Zweig and Csank (1975) reported that chronically ill geriatric patients who received some premove preparation had a significant decrease in mortality rate after relocation (6.82% decline) as compared with the previous year's rate. Although the authors attributed the decrease in mortality rate to the preparation program, since a no-treatment control group was not included in the

design, other factors might have accounted for the observed decrease. For example, the fact that the patients were moved from a very hot old facility to an air conditioned modern facility during two warm summer months, may have contributed to the general decline in mortality rate. Similarly, Novick (1967), examining the efficacy of preparatory relocation training, reported a decrease in mortality rate after relocation. The preparation program included frequent bus trips for the patients to the new facility during construction, patient selection of fixtures for the new building, frequent discussion about the move with social service staff, packing and unpacking of their personal belongings, and the presentation of a life-size model of a new room to patients at the old facility. Although the authors suggested that the postrelocation decrease in mortality was due to their preparation efforts, the conclusions are again tenuous since a no-treatment control group was not utilized.

The comparison of prerelocation and postrelocation mortality rates to substantiate relocation effects may have serious limitations (Borup, Gallego & Heffernan, 1979). First, the validity of institutional mortality records over a number of years may be poor since staff turnover rates

are usually quite high and the quality of record keeping frequently inconsistent. Secondly, patients used to compile prerelocation data may be significantly different from the institution's present population. For example, changes in admittance policies and the type and quality of care (e.g., because of financial need and/or new government requirements) may cause a variation in types of patients admitted to a particular facility. Finally, mortality rates may be influenced by changing policies regarding patients nearing death. Although in the past homes have allowed a patient to die at the home, presently they more readily transfer a dying patient to a community hospital. The decision to consider the dying patient as either a death statistic or simply as a hospital discharge will obviously influence the home's overall mortality rate.

In a post hoc fashion, several studies have compared relocation survivors and nonsurvivors on several variables. As previously mentioned, Killian (1970) and Goldfarb et al. (1972) found that patients in poor health had the highest mortality rate after relocation and differed significantly from similar patients who were not transferred. Goldfarb et al. also found that patients with no apparent brain syndrome fared better after relocation than those with

a brain syndrome. Aldrich and Mendkoff (1963) reported that relocated psychotic or nearly psychotic elderly patients as compared to nonpsychotic patients had the highest mortality rate after relocation. Markus et al. (1971) reported that persons with severe mental dysfunction (as measured by a ten-item mental status questionnaire) had a significantly higher mortality rate than any other group. Additionally, elderly patients who had been depressed before relocation have a higher postrelocation mortality rate than nondepressed clients (Miller & Lieberman, 1965), while those patients who were aggressive, demanding, active, and narcissistic were found to be most likely to survive after relocation (Turner, Tobin & Lieberman, 1972). Markus et al. (1972) attempted to identify variables that may be predictive of relocation nonsurvivors. A battery of tests given before relocation examined (1) perceptual field dependence as measured by the Children's Embedded Figures Test (Karp & Konstadt, 1963); (2) mental status as measured by the mental status questionnaire (Kahn, Goldfarb, Pollack & Peck, 1960); and (3) physical status as measured by the type of ward assigned to (dependent on the nursing care the patient needed), physician rating on the degree of organic brain damage, staff prediction of

patient vulnerability, and patient self-rating on physical functioning (subjects judge their ability to perform certain common tasks and degree of confinement due to illness over the last month), physical dependence (degree of independence in bathing, dressing, eating, toileting, transfer, and continence), days ill in bed and degree of ambulation. A comparison of survivors and nonsurvivors on these variables revealed significant differences for type of ward assigned to, self-reported physical functionings and physical dependence. The mental status ratings only proved significant for males at one of the two homes studied. Overall, survivors scored in the more positive direction on these scales.

Pastalen (cited in Schultz & Brenner, 1977) compared mortality rates between elderly relocatees who participated or did not participate in one of three preparation programs: (1) site visits to the new facility; (2) group discussions regarding relocation; or (3) personal counseling about relocation. Preliminary data indicated that patients who participated in either of the three preparation groups tended to have a lower postrelocation mortality rate than subjects in the no-treatment control group. Post hoc comparisons revealed that although the site visits significantly

reduced the mortality for persons between the ages of 68 and 80 who were diagnosed as mentally confused or having a fair physical prognosis, the visits did not reduce mortality rates for persons over 81 years old, those assessed as mentally alert and persons judged as having a poor or excellent prognosis. Group discussions for subjects judged to have excellent prognosis were found to significantly reduce mortality rate. Finally, the personal counseling program tended to decrease the mortality rate for persons over 81 years old, those with poor prognosis and both mentally alert and mentally confused subjects. Since these data are preliminary, presented with no supporting statistics and little detail, the conclusions are only suggestive. For example, it is not clear how treatment and control group subject selection was determined. In addition, since the amount of attention given to treatment and control groups was not equated, one cannot delineate the actual treatment effects from the influence of simply the increased attention given to subjects in the treatment groups.

In summary, the studies which focus on the relationship between relocation and mortality rate are certainly contradictory; some studies have indicated a large increase, others no change, and still others a decrease in mortality

rate after relocation. In addition to the aforementioned methodological problems, the most limiting factor of these studies is the extreme nature of the dependent variable used. Examination of only mortality rate indicates little about what happens to the patient prior to death (e.g., withdrawal, depression, physiological decline), possible intervening controlling variables (e.g., stress, cue deprivation), and what happens to those patients who have not died. Investigation of these areas is extremely limited.

Physiological Measures

Only a few studies have examined the physiological effects of relocation (Kral, Grad & Berenson, 1968; Lawton & Cohen, 1974; Miller & Lieberman, 1965). Miller and Lieberman (1965) found that almost half of the relocated elderly subjects showed signs of either physiological or psychological decline (e.g., illness, hospitalization, and/or restrictions on activities). Although Lawton and Yaffe (1970) found no difference in mortality rate between subjects who voluntarily relocated and two groups of subjects who did not relocate, the relocated subjects declined more frequently on health measures. Lawton and Cohen (1974), also comparing subjects who voluntarily

relocated with a group of subjects who did not relocate, noted that relocatees were in poorer functional health. Since subjects in these studies were not randomly assigned to the relocation and no-relocation groups, noted changes may have been a result of sampling bias rather than relocation.

Kral et al. (1968) attempted to test the suggestion of several researchers that the effects of relocation are due to high levels of stress among relocated patients. Based on the premise that plasma cortisol levels (a hormone originating in the adrenal cortex) increase during stress (Selye, 1956), the authors recorded the plasma cortisol levels in relocated patients for a period of three to eight days before relocation and for nine to sixteen days after relocation. The authors reported that plasma cortisol levels of relocatees were found to increase significantly after relocation, and the patients observed to have the most physical deterioration after relocation had the greatest plasma cortisol changes.

Behavioral Effects

Cochran, Sran, and Varano (1977), in a descriptive study examining five mentally retarded patients' reactions to relocation, reported that these patients, transferred

from a large centralized institution to a smaller facility, became profoundly depressed, refused to eat, lost weight and wept a great deal. These changes (referred to by the authors as a "relocation syndrome") were not (1) accounted for by medical evaluations, (2) found to be associated with patient prerelocation problems, age, or level of physical functioning, and (3) alleviated by chemotherapy. Cochran et al. reported the following case:

> Joan, a 52-year-old white, profoundly mentally retarded female, was considered normal at birth and had no serious illnesses or injuries, although her developmental landmarks were all extremely delayed. She remained at home, attended no school programs, and was somewhat over-indulged until the time of her parent's death. She was admitted first to a psychiatric facility and, shortly thereafter to Rosewood Center where she resided for 18 years. No depression occurred at Rosewood and she was in good health. At the time of transfer to Great Oaks Center, she was rather quiet and fearful, but not particularly depressed. A few days following transfer, however, she ceased eating, became increasingly depressed, and spent a great deal of her

> time weeping. Her depression lasted 3 to 4 weeks, during which time she lost approximately 15% of her body weight. There was poor response to high caloric dietary supplements and antidepressant medications. She improved gradually and has done well subsequently (p. 10).

The authors noted that for four patients the onset of depressive behaviors began within one week following relocation and lasted between three and four weeks. The other patient died shortly after the onset of depression.

Cohen, Conroy, Frazer, Snelbecker, and Spreat (1977) also studied the behavioral effects of interinstitutional relocation of mentally retarded residents (10-42 years of age). The authors administered an adaptive behavior scale on three occasions (one week prior to, one week following, and seven weeks following relocation) to two groups of residents that were transferred to a new facility and a nontransferred comparison group (housed at another community facility). Overall, following relocation, transferred lower functioning clients (needed skilled nursing care, mean IQ of 20) exhibited an increased range and frequency of behaviors while transferred higher functioning clients (needed intermediate nursing care, mean IQ of 35) showed

a pattern of withdrawal and generally decreased behavior output. Specifically, transferred lower functioning clients showed an increase on the domestic activity, self-direction, responsibility, antisocial behavior, rebellious behavior and stereotyped behavior scales. Transferred higher functioning clients showed a decrease on the independent functioning, economic activity, language development, antisocial behavior and withdrawal scales. The nontransferred comparison group only showed an increase on the domestic activity and self-direction scales.

Lawton, Patnaik, and Kleban (1976) investigated whether elderly patients would exhibit greater passivity and restriction in social space following intrainstitutional room transfer. The authors hypothesized that after relocation, behavior should change in such a way as to maximize the opportunity for reorientation to a new environment and to minimize the risk of anxiety provoking stimuli. An observer recorded patient behaviors and location five times per day during the two-week period prior to and following relocation. Following relocation, patients on the first floor exhibited a significant decrease of effectant behavior (e.g., reading, watching T.V., engaging in occupational therapy), walking and lounge location and

an increase of null and instrumental behavior (e.g., eating, dressing, housekeeping), lying down, standing and bedroom location. Patients on the top floor exhibited a significant decrease of social behavior and hall location, and an increase of null behavior and bed location after relocation. Finally, staff exhibited an increase in time spent in patient bedrooms after relocation. Overall, with the exception of instrumental behavior, following relocation patients exhibited an increase in passive types of behavior. Although this study remains as the best attempt at studying the specific behavioral effect of relocation in the elderly, due to several methodological difficulties (e.g., lack of proper control groups, no reported observer reliability), interpretations of the study must be viewed cautiously.

APPENDIX B

Resident Release Form

I _____ give my permission to be enrolled in a study to help ease the effects of the move to the new facility. I have been informed about the nature and purpose of the study and agree to participate. In addition, I understand that if I wish I may withdraw from the study at any time. I also give my permission for the researcher to have access to my medical records to assist him in helping me.

_____
Resident Signature

_____
Witness

_____
Date

I _____ do not give my consent to be enrolled in the Research Program.

_____
Resident Signature

_____
Witness

_____
Date

APPENDIX C

Behavioral Checklist

Date_____ Observer _____ Subject_____

	Time:					
I. Position						
1. Lying Down						
2. Sitting Up						
3. Standing						
II. Characteristics						
A. Noise						
1. Sounds						
2. Silent						
B. Eye Position						
1. Eyes Closed						
2. Eyes Open						
3. Can't Determine						
III. Individual Activity						
1. Passive						
2. Rising or Seating Self						
3. Watching T.V.						
4. Listening to T.V. (Radio)						
5. Playing a Game						
6. Reading						
7. Making Something						
8. Grooming						
9. Eating						
10. Cleaning						
11. Locomotion						
12. Writing						
13. Other						
IV. Interactive						
A. Activity						
1. Talking						
2. Listening						
3. Playing a Game						
4. Being Helped to Move						
5. Helping Someone Else						
6. Other						

B. Interaction With

1. Staff	___	___	___	___	___	___
2. Other Patient	___	___	___	___	___	___
3. Observer	___	___	___	___	___	___
4. Individual in Study	___	___	___	___	___	___
5. Other (Visitor)	___	___	___	___	___	___

V. Location

A. Room Area

1. Own Room-Door Open	___	___	___	___	___	___
2. Own Room-Door Closed	___	___	___	___	___	___
3. Another Patient's Room	___	___	___	___	___	___
4. Activity Room	___	___	___	___	___	___
5. Hallway	___	___	___	___	___	___
6. Dining Area	___	___	___	___	___	___
7. Other	___	___	___	___	___	___

B. Outside Room Area

1. Outside Building	___	___	___	___	___	___
2. Off Facility Grounds	___	___	___	___	___	___
3. Another Wing (Specify)	___	___	___	___	___	___

VI. Proximity

1. # of Feet to Nearest Person	___	___	___	___	___	___
2. If in Room Alone	___	___	___	___	___	___

APPENDIX D

TABLES

Table 1

Pretreatment Characteristics of Subjects

In the Low and High Functioning Groups

Variable	Low Functioning (n=20)	High Functioning (n=20)
Mental Status	M= 8.550	M= 4.850
PGC Morale Scale	M=12.000	M=13.300
VIRO- Vigor	M= 3.600	M= 4.000
VIRO- Comfortable	M= 1.900	M= 2.350
VIRO- Intactness	M= 8.400	M=11.200
VIRO- Relationship	M=10.250	M=11.350
Self-Maintenance (Nurse-Report)	M=11.000	M= 7.600
Self-Maintenance (Self-Report)	M= 7.550	M= 7.450
Face-Hand	M= 7.100	M= 2.900
Physical Performance	M=10.000	M= 9.800

Table 2

Interobserver Reliability for the Assessment Battery

Variable	Interobserver Reliability
Mental Status	97.500
PGC Morale Scale	96.967
VIRO-Vigor	83.333
VIRO-Comfortable	91.667
VIRO-Intactness	85.000
VIRO-Relationship	83.333
Self-Maintenance (Self-Report)	98.333
Face-Hand	98.300
Physical Performance	100.000

Note. Interobserver Reliability = A/A+D
A = Number of agreements between two observers
D = Number of disagreements between two observers

Table 3

Interobserver Reliability for the Behavioral Checklist

Reliability Session	Body Position	Noise	Eye Position	Activity	Location	Proximity
May 11	95.833	95.833	95.833	91.667	95.833	83.333
May 13	95.833	97.916	79.166	83.333	100.000	95.833
May 17	98.816	97.633	86.982	91.729	98.224	88.757
May 18	100.000	87.628	52.577	91.752	96.907	88.660
May 29	100.000	95.833	91.667	93.750	100.000	85.417
May 30	100.000	92.857	71.428	92.857	92.857	85.714
May 31	97.727	95.455	94.318	88.642	93.182	95.455
June 1	100.000	97.945	87.671	86.986	91.096	91.781
June 10	98.142	97.213	92.260	91.023	96.904	95.356
June 12	99.052	98.104	57.820	93.364	98.578	94.312
June 13	100.000	98.076	91.346	92.307	99.038	91.346
August 25	96.551	96.551	89.655	96.551	93.103	86.207

Note. Interobserver Reliability = A/A+D
A = Number of agreements between two observers
D = Number of disagreements between two observers

Table 4

Experiment I: Main Effect for Treatment

For Testing Variables

Variable	Means		F(1,18)
	Treatment	Control	
Mental Status	8.267	8.133	.574
PGC Morale Scale	12.500	12.367	.055
VIRO-Vigor	2.867	3.167	1.370
VIRO-Comfortable	1.667	1.967	3.505
VIRO-Intactness	7.367	8.900	8.139**
VIRO-Relationship	8.400	10.367	10.320***
Self-Maintenance (Nurse-Report)	10.933	9.767	2.704
Self-Maintenance (Self-Report)	7.668	8.467	4.481*
Face-Hand	7.700	6.633	5.931**
Physical Performance	9.900	10.000	1.976

*$p < .050$
**$p < .025$
***$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	P Less Than
3.257	10	27	.010

Table 5

Experiment I: Main Effect for Blocks for Testing Variables

Variable	Means			F(2, 36)
	Premove	Postmove	Follow-up	
Mental Status	8.550	8.200	7.850	5.271*
PGC Morale Scale	12.000	12.100	13.200	1.823
VIRO-Vigor	3.600	2.400	3.050	7.325*
VIRO-Comfortable	1.900	1.750	1.800	.303
VIRO-Intactness	8.400	7.950	8.050	.258
VIRO-Relationship	10.250	8.950	8.950	2.004
Self-Maintenance (Nurse-Report)	11.000	8.500	11.550	7.000*
Self-Maintenance (Self-Report)	7.550	8.650	8.000	2.855
Face-Hand	7.100	7.450	6.950	.458
Physical Performance	10.000	9.850	10.000	1.976

*$p < .010$

Test of Significance Using Wilks Lamda Criterion and Canonical Correlations

F	DFHYP	DFERR	p Less Than
3.000	20	54	.010

Table 6

Experiment I: Treatment by Block Interaction Means

For Testing Variables

Variable	Premove	Postmove	Follow-up
	Treatment		
Mental Status	8.500	8.200	8.100
PGC Morale Scale	12.500	12.300	12.700
VIRO-Vigor	3.500	2.200	2.900
VIRO-Comfortable	1.600	1.500	1.900
VIRO-Intactness	7.800	7.300	7.000
VIRO-Relationship	9.000	7.400	8.800
Self-Maintenance (Nurse-Report)	11.000	9.000	12.800
Self-Maintenance (Self-Report)	7.200	7.800	8.000
Face-Hand	8.000	7.400	7.700
Physical Performance	10.000	9.700	10.000
	Control		
Mental Status	8.600	8.200	7.600
PGC Morale Scale	11.500	11.900	13.700
VIRO-Vigor	3.700	2.600	3.200
VIRO-Comfortable	2.200	2.000	1.700
VIRO-Intactness	9.000	8.600	9.100
VIRO-Relationship	11.500	10.500	9.100
Self-Maintenance (Nurse-Report)	11.000	8.000	10.300
Self-Maintenance (Self-Report)	7.900	9.500	8.000
Face-Hand	6.200	7.500	6.200
Physical Performance	10.000	10.000	10.000

Table 7

Experiment I: Treatment by Block

Interaction for Testing Variables

Variable	F(2,36)
Mental Status	1.112
PGC Morale Scale	1.083
VIRO-Vigor	.051
VIRO-Comfortable	2.466
VIRO-Intactness	.281
VIRO-Relationship	1.933
Self-Maintenance (Nurse-Report)	1.049
Self-Maintenance (Self-Report)	1.704
Face-Hand	1.813
Physical Performance	1.976

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
1.509	20	54	.100

Table 8

Experiment I: Main Effect for Treatment

For Testing Variables Using Difference Scores

Variable	Means		F(1,18)
	Treatment	Control	
Mental Status	-.350	- .700	2.549
PGC Morale Scale	.000	1.300	4.056
VIRO-Vigor	-.950	- .800	.306
VIRO-Comfortable	.100	- .350	4.418*
VIRO-Intactness	-.650	- .150	.614
VIRO-Relationship	-.900	-1.700	1.684
Self-Maintenance (Nurse-Report)	-.100	-1.850	3.065
Self-Maintenance (Self-Report)	.700	.850	.109
Face-Hand	-.450	.650	3.685
Physical Performance	-.150	.000	1.976

*$p < .050$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations[a]

F	DFHYP	DFERR	p Less Than
3.595	9	10	.050

[a] The MANOVA was performed on nine variables since the physical performance variable was excluded.

Table 9

Experiment I: Main Effect for Blocks

For Testing Variables Using Difference Scores

Variable	Means		F(1,18)
	Postmove	Follow-up	
Mental Status	- .350	- .700	2.549
PGC Morale Scale	.100	1.200	2.904
VIRO-Vigor	-1.200	- .550	5.740*
VIRO-Comfortable	- .150	- .100	.055
VIRO-Intactness	- .450	- .350	.025
VIRO-Relationship	-1.300	-1.300	.000
Self-Maintenance (Nurse-Report)	-2.500	.550	9.310**
Self-Maintenance (Self-Report)	1.100	.450	2.053
Face-Hand	.350	- .150	.761
Physical Performance	- .150	.000	1.976

*$p < .05$
**$p < .01$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations[a]

F	DFHYP	DFERR	p Less Than
3.595	9	10	.050

[a] The MANOVA was performed on nine variables since the physical performance variable was excluded.

Table 10

Experiment I: Treatment by Block Interaction Means

For Testing Variables Using Difference Scores

Variable	Postmove	Follow-up
Treatment		
Mental Status	- .300	- .400
PGC Morale Scale	- .200	.200
VIRO-Vigor	-1.300	- .600
VIRO-Comfortable	- .100	.300
VIRO-Intactness	- .500	- .800
VIRO-Relationship	-1.600	- .200
Self-Maintenance (Nurse-Report)	-2.000	1.800
Self-Maintenance (Self-Report)	.600	.800
Face-Hand	- .600	- .300
Physical Performance	- .300	.000
Control		
Mental Status	- .400	-1.000
PGC Morale Scale	.400	2.200
VIRO-Vigor	-1.100	- .500
VIRO-Comfortable	- .200	- .500
VIRO-Intactness	- .400	.100
VIRO-Relationship	-1.000	-2.400
Self-Maintenance (Nurse-Report)	-3.000	- .700
Self-Maintenance (Self-Report)	1.600	.100
Face-Hand	1.300	.000
Physical Performance	.000	.000

Table 11

Experiment I: Treatment by Block Interaction

For Testing Variables Using Difference Scores

Variable	F(2,36)
Mental Status	1.301
PGC Morale Scale	1.176
VIRO-Vigor	.034
VIRO-Comfortable	2.673
VIRO-Intactness	.393
VIRO-Relationship	5.158**
Self-Maintenance (Nurse-Report)	.563
Self-Maintenance (Self-Report)	3.510*
Face-Hand	1.949
Physical Performance	1.976

*$p < .050$
**$p < .025$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations[a]

F	DFHYP	DFERR	p Less Than
2.690	9	10	.100

[a] The MANOVA was performed on nine variables since the physical performance variable was excluded.

Table 12

Experiment I: Main Effect for Treatment

For Activity Variables

	Means		
Variable	Treatment	Control	F(1,18)
Passive	58.022	60.100	3.181
Individual Activity	7.253	9.136	7.320*
Interactive Activity	2.417	3.650	9.865**
Grooming & Cleaning	6.739	3.769	23.130**
Consumatory	6.806	7.594	2.413

*$p < .025$
**$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
9.477	5	446	.010

Table 13

Experiment I: Main Effect for Block for Activity Variables

	Premove		Postmove			Follow-up	
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1	F(5,90)
Passive	60.492	55.275	56.550	62.342	61.117	58.591	3.723**
Individual Activity	6.600	9.083	8.933	8.583	9.125	6.842	1.851
Interactive Activity	4.700	3.625	1.850	2.700	2.283	3.042	4.498**
Grooming & Cleaning	6.558	6.425	6.058	3.783	3.250	5.450	3.475**
Consumatory	7.917	7.450	7.750	6.467	7.992	5.625	2.339*

*p <.050
**p <.010

Test of Significance Using Wilks Lamda Criterion and Canonical Correlations

F	DFHYP	DFERR	p Less Than
3.494	25	1658.320	.010

Table 14

Experiment I: Treatment by Block Interaction Means for Activity Variable

	Premove		Postmove			Follow-up
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1
			Treatment Group			
Passive	64.433	54.800	55.967	57.883	59.450	55.600
Individual Activity	4.067	7.500	8.633	8.267	8.950	6.100
Interactive Activity	3.850	3.467	1.567	2.033	1.317	2.267
Grooming & Cleaning	6.167	7.617	6.383	6.233	5.517	8.517
Consumatory	7.400	6.633	7.450	6.200	7.617	5.533
			Control Group			
Passive	56.550	55.750	57.133	66.800	62.783	61.583
Individual Activity	9.133	10.667	9.233	8.900	9.300	7.583
Interactive Activity	5.550	3.783	2.133	3.367	3.250	3.817
Grooming & Cleaning	6.950	5.233	5.733	1.333	.983	2.383
Consumatory	8.433	8.267	8.050	6.733	8.367	5.717

Table 15

Experiment I: Treatment by Block Interaction

For Activity Variables

Variable	F(5,90)
Passive	4.051**
Individual Activity	1.204
Interactive Activity	.455
Grooming & Cleaning	3.147*
Consumatory	.161

*p <.025
**p <.010

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
1.376	25	1,658.320	.100

Table 16

Experiment I: Main Effect for Treatment

For Activity Variables Using Difference Scores

	Means		
Variable	Treatment	Control	F(1,18)
Passive	-2.400	5.925	14.959**
Individual Activity	2.150	-1.150	7.030*
Interactive Activity	-1.900	-1.450	.982
Grooming & Cleaning	- .275	-3.600	12.133**
Consumatory	- .250	-1.175	3.160

*$p < .025$
**$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	P Less Than
5.600	5	50	.010

Table 17

Experiment I: Main Effect for Blocks for Activity Variables

Using Difference Scores

	Postmove			Follow-up	
Variable	Block 1	Block 2	Block 3	Block 1	F(3, 54)
Passive	-1.400	4.500	3.250	.700	1.499
Individual Activity	1.100	.700	1.200	-1.000	.676
Interactive Activity	-2.250	-1.450	-1.900	-1.100	1.232
Grooming & Cleaning	- .450	-2.800	-3.350	-1.150	2.038
Consumatory	.000	-1.100	.350	-2.100	4.569*

*$p < .010$

Test of Significance Using Wilks Lamda Criterion and Canonical Correlations

F	DFHYP	DFERR	p Less Than
1.770	15	138.43	.050

Table 18

Experiment I: Treatment by Block Interaction Means

For Activity Variables Using Difference Scores

	Postmove			Follow-up
Variable	Block 1	Block 2	Block 3	Block 1
	Treatment			
Passive	-3.800	- 1.700	- .200	-3.900
Individual Activity	2.900	2.300	3.100	.300
Interactive Activity	-2.100	- 1.700	-2.400	-1.400
Grooming & Cleaning	- .500	- .800	-1.400	1.600
Consumatory	.400	- .700	.700	-1.400
	Control			
Passive	1.000	10.700	6.700	5.300
Individual Activity	- .700	- .900	- .700	-2.300
Interactive Activity	-2.400	- 1.200	-1.400	- .800
Grooming & Cleaning	- .400	- 4.800	-5.300	-3.900
Consumatory	- .400	- 1.500	.000	-2.800

Table 19

Experiment I: Treatment by Block Interaction

For Activity Variables Using Difference Scores

Variable	F(3,54)
Passive	.573
Individual Activity	.045
Interactive Activity	.359
Grooming & Cleaning	1.577
Consumatory	.095

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Greater Than
.547	15	138.430	.100

Table 20

Experiment I: Main Effect for Treatment

For Person Variables

	Means		
Variable	Treatment	Control	F(1,18)
Own Room	23.083	34.667	79.868**
Hallway	19.731	19.736	.000
Other Floor	5.683	3.636	13.906**
Outside	7.158	4.750	7.688*
0-5 Feet	60.053	56.064	8.612**
6-10 Feet	14.147	16.758	6.897*
Alone	18.922	23.203	10.967**
Lying	11.631	23.328	121.654**
Standing	38.000	29.847	46.914**
Sounds	10.964	5.039	65.243**

*$p < .025$
**$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
26.021	10	441	.010

Table 21

Experiment I: Main Effect for Block for Person Variables

	Premove		Postmove			Follow-up	
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1	F(5, 90)
Own Room	30.033	29.726	26.317	30.650	30.633	25.892	1.885
Hallway	19.975	18.692	19.508	16.517	16.050	27.658	9.654**
Other Floor	5.125	8.100	2.242	3.317	4.883	4.292	8.798**
Outside	15.258	14.100	.908	.366	.442	4.650	42.712**
0-5 Feet	58.308	51.250	66.417	58.450	55.433	58.492	8.913**
6-10 Feet	9.533	14.408	13.458	20.400	20.775	14.142	12.764**
Alone	21.992	25.317	18.092	19.617	19.450	21.908	2.649*
Lying	18.283	18.333	14.667	19.575	18.333	15.683	2.090
Standing	33.725	34.450	31.492	31.742	32.775	39.358	3.938**
Sounds	11.492	12.258	6.500	5.292	5.417	7.050	11.767**

*$p < .050$
**$p < .010$

Test of Significance Using Wilks Lamda Criterion and Canonical Correlations

F	DFHYP	DFERR	p Less Than
10.235	50	2014.630	.010

Table 22

Experiment I: Treatment by Block Interaction Means for Person Variables

	Premove		Postmove			Follow-up
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1
	Treatment Group					
Own Room	28.850	26.667	22.283	22.817	21.783	16.100
Hallway	14.183	14.216	20.683	19.417	19.183	30.700
Other Floor	7.350	8.950	2.817	3.833	5.733	5.417
Outside	16.367	17.317	.417	.417	.550	7.883
0-5 Feet	54.467	43.883	69.167	63.067	61.900	67.833
6-10 Feet	10.050	15.017	12.300	17.817	17.533	12.167
Alone	20.833	27.533	17.133	18.283	15.567	14.183
Lying	16.267	13.183	11.267	11.517	10.683	6.867
Standing	34.750	38.700	34.117	35.550	36.833	48.050
Sounds	13.233	16.800	7.267	8.717	8.900	10.867

Table 22- Continued

	Premove		Postmove			Follow-up
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1
			Control Group			
Own Room	31.217	32.783	30.350	38.483	39.483	35.683
Hallway	25.767	23.167	18.333	13.617	12.917	24.617
Other Floor	2.900	7.250	1.667	2.800	4.033	3.167
Outside	14.150	10.883	1.400	.317	.333	1.417
0-5 Feet	62.150	58.617	63.667	53.833	48.967	49.150
6-10 Feet	9.017	13.800	14.617	22.983	24.017	16.117
Alone	23.150	23.100	19.050	20.950	23.333	29.633
Lying	20.300	23.483	18.067	27.633	25.983	24.500
Standing	32.700	30.200	28.867	27.933	28.717	30.667
Sounds	9.750	7.717	5.733	1.867	1.933	3.233

Table 23

Experiment I: Treatment by Block Interaction

For Person Variables

Variable	F(5,90)
Own Room	4.867***
Hallway	9.052***
Other Floor	.872
Outside	2.401*
0-5 Feet	14.658***
6-10 Feet	1.731
Alone	4.487***
Lying	4.517***
Standing	3.089**
Sounds	2.483*

*$p < .050$
**$p < .025$
***$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	P Less Than
4.127	50	2014.630	.010

Table 24

Experiment I: Main Effect for Treatment

For Person Variables Using Difference Scores

	Means		
Variable	Treatment	Control	F(1,18)
Own Room	- 7.100	4.025	23.488**
Hallway	8.450	- 7.125	45.906**
Other Floor	- 3.775	- 2.325	3.247
Outside	-14.650	-11.625	7.416*
0-5 Feet	16.375	- 6.525	133.087**
6-10 Feet	2.525	8.250	8.228*
Alone	- 8.050	.275	14.687**
Lying	- 4.700	2.125	14.294**
Standing	2.075	- 2.350	3.362
Sounds	- 6.275	- 5.700	.268

*$p < .025$
**$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	P Less Than
51.281	10	45	.010

Table 25

Experiment I: Main Effect for Blocks

For Person Variables Using Difference Scores

	Postmove			Follow-up	
Variable	Block 1	Block 2	Block 3	Block 1	F(3, 54)
Own Room	- 3.600	- .850	- .700	- 4.100	1.362
Hallway	.250	- 2.800	- 3.150	8.350	5.412**
Other Floor	- 4.450	- 3.400	- 1.850	- 2.500	1.969
Outside	-13.800	-14.400	-14.300	-10.050	3.490*
0-5 Feet	11.750	3.700	.650	3.600	5.762**
6-10 Feet	1.600	8.600	9.050	2.300	3.984*
Alone	- 5.500	- 4.000	- 4.250	- 1.800	.502
Lying	- 3.700	1.200	.000	- 2.650	1.588
Standing	- 2.500	- 2.200	- 1.200	5.350	2.351
Sounds	- 5.500	- 6.750	- 6.700	- 5.000	.621

*$p < .025$
**$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
2.838	30	132.760	.010

Table 26

Experiment I: Treatment by Block Interaction Means

For Person Variables Using Difference Scores

	Postmove			Follow-up
Variables	Block 1	Block 2	Block 3	Block 1
		Treatment		
Own Room	- 5.500	- 4.900	- 6.100	-11.900
Hallway	6.700	5.200	5.200	16.700
Other Floor	- 5.300	- 4.400	- 2.500	- 2.900
Outside	-16.500	-16.500	-16.400	- 9.100
0-5 Feet	20.100	14.000	12.700	18.700
6-10 Feet	- .200	5.500	5.100	- .300
Alone	- 7.200	- 6.000	- 8.800	-10.200
Lying	- 3.500	- 3.300	- 4.100	- 7.900
Standing	- 2.500	- .900	.300	-11.400
Sounds	- 7.900	- 6.500	- 6.400	- 4.300
		Control		
Own Room	- 1.700	6.600	7.500	3.700
Hallway	- 6.200	-10.800	-11.500	.000
Other Floor	- 3.600	- 2.400	- 1.200	- 2.100
Outside	-11.100	-12.200	-12.200	-11.000
0-5 Feet	3.400	- 6.600	-11.400	-11.500
6-10 Feet	3.400	11.700	13.000	4.900
Alone	- 3.800	- 2.000	.300	6.600
Lying	- 3.900	5.700	4.100	2.600
Standing	- 2.500	- 3.500	- 2.700	- .700
Sounds	- 3.100	- 7.000	- 7.000	- 5.700

Table 27

Experiment I: Treatment by Block Interaction

For Person Variables Using Difference Scores

Variable	F(3,54)
Own Room	1.264
Hallway	.156
Other Floor	.104
Outside	2.240
0-5 Feet	2.082
6-10 Feet	.204
Alone	2.038
Lying	1.850
Standing	1.200
Sounds	1.639

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Greater Than
1.260	30	132.760	.100

Table 28

Experiment II: Main Effect for Treatment

For Testing Variables

Variable	Means		F(1,18)
	Treatment	Control	
Mental Status	4.567	4.633	.040
PGC Morale Scale	11.733	13.400	4.843*
VIRO-Vigor	3.900	3.833	.100
VIRO-Comfortable	2.367	2.100	3.165
VIRO-Intactness	11.333	10.667	1.929
VIRO-Relationship	11.800	10.433	4.065
Self-Maintenance (Nurse-Report)	7.900	7.967	.023
Self-Maintenance (Self-Report)	8.433	7.267	17.614**
Face-Hand	2.767	2.967	.091
Physical Performance	9.867	10.000	1.000

*$p < .050$
**$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
2.368	10	27	.050

Table 29

Experiment II: Main Effect for Block for Testing Variables

Variable	Means			F(2, 36)
	Premove	Postmove	Follow-up	
Mental Status	4.850	4.600	4.350	.754
PGC Morale Scale	13.300	12.100	12.300	.961
VIRO-Vigor	4.000	3.650	3.950	1.075
VIRO-Comfortable	2.350	2.050	2.300	1.533
VIRO-Intactness	11.200	10.600	11.200	.695
VIRO-Relationship	11.350	10.550	11.450	.706
Self-Maintenance (Nurse-Report)	7.600	7.550	8.650	2.621
Self-Maintenance (Self-Report)	7.450	8.150	7.950	2.243
Face-Hand	2.900	3.250	2.450	.485
Physical Performance	9.800	10.000	10.000	1.000

Test of Significance Using Wilks Lamda Criterion and Canonical Correlations

F	DFHYP	DFERR	p Greater Than
1.088	20	54	.100

Table 30

Experiment II: Treatment by Block Interaction Means

For Testing Variables

Variable	Premove	Postmove	Follow-up
	Treatment Group		
Mental Status	4.900	4.600	4.200
PGC Morale Scale	12.700	10.700	11.800
VIRO-Vigor	4.200	3.500	4.000
VIRO-Comfortable	2.400	2.100	2.600
VIRO-Intactness	11.400	10.800	11.800
VIRO-Relationship	12.500	10.800	12.100
Self-Maintenance (Nurse Report)	7.400	7.500	8.800
Self-Maintenance (Self-Report)	8.100	8.900	8.300
Face-Hand	3.200	3.100	2.000
Physical Performance	9.600	10.000	10.000
	Control Group		
Mental Status	4.800	4.600	4.500
PGC Morale Scale	13.900	13.500	12.800
VIRO-Vigor	3.800	3.800	3.900
VIRO-Comfortable	2.300	2.000	2.000
VIRO-Intactness	11.000	10.400	10.600
VIRO-Relationship	10.200	10.300	10.800
Self-Maintenance (Nurse-Report)	7.800	7.600	8.500
Self-Maintenance (Self-Report)	6.800	7.400	7.600
Face-Hand	2.600	3.400	2.900
Physical Performance	10.000	10.000	10.000

Table 31

Experiment II: Treatment by Block Interaction

For Testing Variables

Variable	F(2,36)
Mental Status	.131
PGC Morale Scale	.566
VIRO-Vigor	.925
VIRO-Comfortable	1.236
VIRO-Intactness	.309
VIRO-Relationship	.590
Self-Maintenance (Nurse-Report)	.209
Self-Maintenance (Self-Report)	.748
Face-Hand	.430
Physical Performance	1.000

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Greater Than
.597	20	54	.100

Table 32

Experiment II: Main Effect for Treatment

For Testing Variables Using Difference Scores

Variable	Means		F(1,18)
	Treatment	Control	
Mental Status	- .500	-.250	.334
PGC Morale Scale	-1.450	-.750	.503
VIRO-Vigor	- .450	-.050	4.639*
VIRO-Comfortable	- .050	-.300	1.800
VIRO-Intactness	- .100	-.500	.546
VIRO-Relationship	-1.050	.350	2.627
Self-Maintenance (Nurse-Report)	.750	.250	.783
Self-Maintenance (Self-Report)	.500	.700	.360
Face-Hand	- .650	.550	2.549
Physical Performance	.400	.000	.688

*$p < .05$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations[a]

F	DFHYP	DFERR	p Less Than
4.037	9	10	.025

[a]The MANOVA was performed on nine variables since the physical performance variable was excluded.

Table 33

Experiment II: Main Effects for Blocks

For Testing Variables Using Difference Scores

Variable	Means		F(1,18)
	Postmove	Follow-up	
Mental Status	- .250	- .500	.334
PGC Morale Scale	-1.200	-1.000	.041
VIRO-Vigor	- .350	- .050	1.670
VIRO-Comfortable	- .300	- .050	1.800
VIRO-Intactness	- .600	.000	1.227
VIRO-Relationship	- .800	.100	1.227
Self-Maintenance (Nurse-Report)	- .050	1.050	3.788
Self-Maintenance (Self-Report)	.700	.500	.360
Face-Hand	.350	- .450	1.133
Physical Performance	.200	.200	.000

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations[a]

F	DFHYP	DFERR	p Greater Than
1.139	9	10	.100

[a]The MANOVA was performed on nine variables since the physical performance variable was excluded.

Table 34

Experiment II: Treatment by Block Interaction Means

For Testing Variables Using Difference Scores

Variable	Postmove	Follow-up
	Treatment	
Mental Status	- .300	- .700
PGC Morale Scale	-2.000	- .900
VIRO-Vigor	- .700	- .200
VIRO-Comfortable	- .300	.200
VIRO-Intactness	- .600	.400
VIRO-Relationship	-1.700	- .400
Self-Maintenance (Nurse-Report)	.100	1.400
Self-Maintenance (Self-Report)	.800	.200
Face-Hand	- .100	-1.200
Physical Performance	.400	.400
	Control	
Mental Status	- .200	- .300
PGC Morale Scale	- .400	-1.100
VIRO-Vigor	.000	.100
VIRO-Comfortable	- .300	- .300
VIRO-Intactness	- .600	- .400
VIRO-Relationship	.100	.600
Self-Maintenance (Nurse-Report)	- .200	.700
Self-Maintenance (Self-Report)	.600	.800
Face-Hand	.800	.300
Physical Performance	.000	.000

Table 35

Experiment II: Treatment by Block Interaction

For Testing Variables Using Difference Scores

Variable	F(2,36)
Mental Status	.120
PGC Morale Scale	.831
VIRO-Vigor	.742
VIRO-Comfortable	1.800
VIRO-Intactness	.545
VIRO-Relationship	.214
Self-Maintenance (Nurse-Report)	.125
Self-Maintenance (Self-Report)	1.440
Face-Hand	.159
Physical Performance	.000

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations[a]

F	DFHYP	DFERR	p Greater Than
.299	9	10	.100

[a]The MANOVA was performed on nine variables since the physical performance variable was excluded.

Table 36

Experiment II: Main Effect for Treatment

For Activity Variables

	Means		
Variable	Treatment	Control	F(1,18)
Passive	53.572	55.692	3.089
Individual Activity	15.517	8.922	17.150**
Interactive Activity	1.775	2.683	5.602*
Grooming & Cleaning	6.175	6.894	1.443
Consumatory	11.353	11.719	.233

*$p < .05$
**$p < .01$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
6.768	5	446	.010

Table 37

Experiment II: Main Effect for Block for Activity Variables

	Premove		Postmove			Follow-up	
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1	F(5, 90)
Passive	57.441	54.150	51.441	55.858	53.792	55.108	1.903
Individual Activity	8.733	11.858	19.242	11.333	12.817	9.333	3.737*
Interactive Activity	1.942	2.442	1.717	2.392	2.900	1.983	.840
Grooming & Cleaning	7.775	6.842	6.975	6.008	5.600	6.008	1.210
Consumatory	14.167	11.008	11.033	10.800	11.675	10.533	2.086

*$p < .010$

Test of Significance Using Wilks Lamda Criterion and Canonical Correlations

F	DFHYP	DFERR	p Less Than
2.490	25	1658.320	.010

Table 38

Experiment II: Treatment by Block Interaction Means

For Activity Variables

	Premove		Postmove			Follow-up
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1
			Treatment Group			
Passive	55.217	53.667	48.083	56.600	52.900	54.967
Individual Activity	9.900	16.667	22.050	16.267	15.467	12.750
Interactive Activity	2.033	2.433	.433	1.700	2.283	1.767
Grooming & Cleaning	7.717	5.517	6.900	5.267	5.717	5.933
Consumatory	14.983	10.750	9.883	9.683	10.967	11.850

Table 38- Continued

	Premove		Postmove			Follow-up
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1
			Control Group			
Passive	59.667	54.634	54.800	55.117	54.683	55.250
Individual Activity	7.567	7.050	16.433	6.400	10.167	5.917
Interactive Activity	1.850	2.450	3.000	3.083	3.517	2.200
Grooming & Cleaning	7.833	8.167	7.050	6.750	5.483	6.083
Consumatory	13.350	11.267	12.183	11.917	12.383	9.217

Table 39

Experiment II: Treatment by Block Interaction

For Activity Variables

Variable	F(5,90)
Passive	1.017
Individual Activity	.535
Interactive Activity	1.198
Grooming & Cleaning	.579
Consumatory	1.234

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Greater Than
1.162	25	1658.320	.100

Table 40

Experiment II: Main Effect for Treatment

For Activity Variables Using Difference Scores

	Means		
Variable	Treatment	Control	F(1,18)
Passive	-1.175	-2.150	.224
Individual Activity	3.350	2.450	.119
Interactive Activity	- .725	.700	14.536*
Grooming & Cleaning	- .700	-1.500	1.286
Consumatory	-2.300	- .775	2.653

*$p < .01$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
4.256	5	50	.010

Table 41

Experiment II: Main Effect for Blocks for Activity Variables

Using Difference Scores

	Postmove			Follow-up	
Variable	Block 1	Block 2	Block 3	Block 1	F(3, 54)
Passive	-4.350	.200	-1.900	- .600	.935
Individual Activity	8.950	1.050	2.600	-1.000	2.703
Interactive Activity	- .450	.150	.600	- .350	1.687
Grooming & Cleaning	- .300	-1.250	-1.600	-1.250	.627
Consumatory	-1.450	-1.750	- .850	-2.100	.320

Test of Significance Using Wilks Lamda Criterion and Canonical Correlations

F	DFHYP	DFERR	p Greater Than
1.275	15	138.430	.100

Table 42

Experiment II: Treatment by Block Interaction Means

For Activity Variables Using Difference Scores

	Postmove			Follow-up
Variable	Block 1	Block 2	Block 3	Block 1
	Treatment			
Passive	-6.300	2.400	-1.500	.700
Individual Activity	8.700	3.000	2.300	- .600
Interactive Activity	-1.800	- .500	.000	- .600
Grooming & Cleaning	.200	-1.400	- .900	- .700
Consumatory	-3.000	-3.200	-1.900	-1.100
	Control			
Passive	-2.400	-2.000	-2.300	-1.900
Individual Activity	9.200	- .900	2.900	-1.400
Interactive Activity	.900	.800	1.200	- .100
Grooming & Cleaning	- .800	-1.100	-2.300	-1.800
Consumatory	.100	- .300	.200	-3.100

Table 43

Experiment II: Treatment by Block Interaction

For Activity Variables Using Difference Scores

Variable	F(3,54)
Passive	.751
Individual Activity	.161
Interactive Activity	1.520
Grooming & Cleaning	.285
Consumatory	1.628

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Greater Than
1.145	15	138.430	.100

Table 44

Experiment II: Main Effect for Treatment

For Person Variables

	Means		
Variable	Treatment	Control	F(1,18)
Own Room	39.169	31.630	34.108***
Hallway	13.392	15.297	5.336*
Other Floor	1.967	3.169	6.380**
Outside	7.639	5.931	4.776*
0-5 Feet	54.764	60.578	23.691***
6-10 Feet	13.197	14.961	4.763*
Alone	28.989	20.811	44.432***
Lying	18.555	17.080	1.745
Standing	21.347	27.969	43.956***
Sounds	7.353	7.622	.156

*$p < .05$
**$p < .025$
***$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
13.261	10	441	.010

Table 45

Experiment II: Main Effect for Block for Person Variable

	Premove		Postmove			Follow-up	
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1	F(5, 90)
Own Room	36.642	38.508	28.833	36.825	34.950	36.642	4.649**
Hallway	11.500	12.633	15.317	13.408	14.300	18.908	6.597**
Other Floor	2.700	4.142	1.050	2.467	2.617	2.433	2.840*
Outside	15.383	12.300	.883	1.608	4.225	6.308	37.694**
0-5 Feet	55.242	51.875	67.825	56.067	54.900	60.117	14.844**
6-10 Feet	9.008	11.617	12.692	19.075	18.392	13.692	15.800**
Alone	31.892	31.750	16.850	22.533	22.683	23.692	15.289**
Lying	18.542	19.275	14.875	18.675	16.333	19.208	1.731
Standing	20.017	25.308	22.867	25.417	25.650	28.692	5.747**
Sounds	9.317	9.558	7.175	6.100	5.458	7.317	3.949**

*$p < .025$
**$p < .010$

Test of Significance Using Wilks Lamda Criterion and Canonical Correlations

F	DFHYP	DFERR	p Less Than
9.381	50	2014.630	.010

Table 46

Experiment II: Treatment by Block Interaction Means for Person Variables

	Premove		Postmove			Follow-up
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1
	Treatment Group					
Own Room	41.017	44.183	30.483	38.883	39.300	41.150
Hallway	11.867	12.450	14.550	11.683	13.533	16.267
Other Floor	1.933	4.333	1.050	.667	1.667	2.150
Outside	19.567	12.100	.667	1.217	2.717	9.567
0-5 Feet	52.133	47.683	65.967	54.567	51.717	56.517
6-10 Feet	8.316	12.583	11.067	18.100	17.383	11.733
Alone	36.517	34.683	20.033	25.467	27.433	29.800
Lying	21.567	20.700	13.517	17.517	18.950	19.083
Standing	16.283	21.667	19.800	20.867	23.883	25.583
Sounds	9.150	7.467	7.100	5.600	6.167	8.633

Table 46- Continued

	Premove		Postmove			Follow-up
Variable	Block 1	Block 2	Block 1	Block 2	Block 3	Block 1
			Control Group			
Own Room	32.267	32.833	27.183	34.767	30.600	32.133
Hallway	11.133	12.817	16.083	15.133	15.067	21.550
Other Floor	3.467	3.950	1.050	4.267	3.567	2.717
Outside	11.200	12.500	1.100	2.000	5.733	3.050
0-5 Feet	58.350	56.067	69.683	57.567	58.083	63.717
6-10 Feet	9.700	10.650	14.317	20.050	19.400	15.650
Alone	27.267	28.817	13.667	19.600	17.933	17.583
Lying	15.517	17.850	16.233	19.833	13.717	19.333
Standing	23.750	28.950	25.933	29.967	27.417	31.800
Sounds	9.483	11.650	7.250	6.600	4.750	6.000

Table 47

Experiment II: Treatment by Block Interaction

For Person Variables

Variable	F(5,90)
Own Room	.984
Hallway	1.146
Other Floor	1.574
Outside	5.729*
0-5 Feet	.498
6-10 Feet	1.059
Alone	.735
Lying	1.922
Standing	.576
Sounds	1.941

*$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
2.123	50	2014.630	.010

Table 48

Experiment II: Main Effect for Treatment

For Person Variables Using Difference Scores

	Means		
Variable	Treatment	Control	F(1,18)
Own Room	- 5.200	- 1.350	1.797
Hallway	1.800	4.975	5.651*
Other Floor	- 1.775	- .975	1.570
Outside	-12.475	- 8.875	6.750**
0-5 Feet	7.375	4.850	.845
6-10 Feet	4.175	7.350	4.840*
Alone	- 9.850	-11.000	.150
Lying	- 3.900	.525	4.041
Standing	3.550	2.450	.376
Sounds	- 1.450	- 4.250	5.767*

*$p < .050$
**$p < .025$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
6.600	10	45	.010

Table 49

Experiment II: Main Effect for Blocks

For Person Variables Using Difference Scores

	Postmove			Follow-up	
Variable	Block 1	Block 2	Block 3	Block 1	F(3, 54)
Own Room	- 8.750	- .800	- 2.650	- .900	1.703
Hallway	3.200	1.250	2.250	6.850	3.342*
Other Floor	- 2.450	- 1.050	- .900	- 1.100	1.278
Outside	-13.000	-12.450	- 9.700	- 7.650	3.180*
0-5 Feet	14.300	2.450	1.300	6.400	4.582**
6-10 Feet	2.400	9.000	8.150	3.500	5.218**
Alone	-15.000	- 9.350	- 9.150	- 8.200	1.085
Lying	- 4.000	- .300	- 2.650	.200	.809
Standing	.200	2.700	3.050	6.050	1.786
Sounds	- 2.250	- 3.350	- 3.950	- 2.200	.480

*$p < .050$
**$p < .010$

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Less Than
3.154	30	132.760	.010

Table 50

Experiment II: Treatment by Block Interaction Means

For Person Variables Using Difference Scores

	Postmove			Follow-up
Variable	Block 1	Block 2	Block 3	Block 1
		Treatment Group		
Own Room	-12.200	- 3.800	- 3.300	- 1.500
Hallway	2.300	- .600	1.400	4.100
Other Floor	- 2.100	- 2.500	- 1.500	- 1.000
Outside	-15.300	-14.800	-13.300	- 6.500
0-5 Feet	16.200	4.800	1.900	6.600
6-10 Feet	.600	7.800	7.000	1.300
Alone	-15.400	-10.100	- 8.100	- 5.800
Lying	- 7.600	- 3.600	- 2.200	- 2.200
Standing	.800	1.700	5.000	6.700
Sounds	- 1.300	- 2.600	- 2.100	.200
		Control Group		
Own Room	- 5.300	2.200	- 2.000	- .300
Hallway	4.100	3.100	3.100	9.600
Other Floor	- 2.800	.400	- .300	- 1.200
Outside	-10.700	- 9.900	- 6.100	- 8.800
0-5 Feet	12.400	.100	.700	6.200
6-10 Feet	4.200	10.200	9.300	5.700
Alone	-14.600	- 8.600	-10.200	-10.600
Lying	- .400	3.000	- 3.100	2.600
Standing	- .400	3.700	1.100	5.400
Sounds	- 3.200	- 4.100	- 5.800	- 4.600

Table 51

Experiment II: Treatment by Block Interaction

For Person Variables Using Difference Scores

Variable	F(3,54)
Own Room	.277
Hallway	.455
Other Floor	1.599
Outside	2.190
0-5 Feet	.140
6-10 Feet	.122
Alone	.237
Lying	.704
Standing	.453
Sounds	.390

Test of Significance Using Wilks Lamda Criterion

And Canonical Correlations

F	DFHYP	DFERR	p Greater Than
1.004	30	132.760	.100

Table 52

Patient Death Rate

Age	1973	1974	1975	1976	1977	1978
Under 50	0	2	1	0	0	0
50-59	2	4	2	2	4	2
60-69	6	7	8	1	8	8
Over 70	51	36	34	31	25	36

Note. Yearly figures represent March through August totals. The time period, March through August, refers to the three months before and the three months after relocation.

Test of Significance Using Chi-Square

chi-square	df	p Less Than
8.844	5	.100

Table 53

Patient Discharge Rate

Age	1973	1974	1975	1976	1977	1978
Under 50	1	2	1	1	1	1
50-59	4	4	5	3	3	11
60-69	10	1	4	3	0	19
Over 70	22	13	13	16	7	20

Note. Yearly figures represent March through August totals. The time period, March through August, refers to the three months before and the three months after relocation.

Test of Significance Using Chi-Square

chi-square	df	p Less Than
36.782	5	.001