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INTERNAL-EXTERNAL LOCUS OF CONTROL  
AND CHOICE BEHAVIOR ASSOCIATED WITH THE USE OF  
PORTABLE LONG-TERM MECHANICAL VENTILATORS

by

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THESIS

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## CHAPTER I

### INTRODUCTION

#### Background

Developments in bioengineering over the past three decades have enabled many individuals to survive the permanent failure of a vital physiologic system. A growing number of people depend on mechanical and/or electronic devices for a wide range of physiological functions, including that of heart, lung, kidney and other vital organs. The variety of available support appliances has increased rapidly, and with it, the legion of men and women whose lives must interface with a machine.

Since these machines unquestionably circumvent an otherwise certain death, it is consistent with the prevailing attitude of Western culture to see them as being wholly beneficial (Gaylin, Glasser, Marcus, and Rothman, 1978). The high cost of this mode of medical intervention has generated a wide-ranging public debate. To date, the controversy has centered upon the social and ethical problems of distributive justice, the problem of access to a relatively scarce resource and the criterion for selection of the recipients. The focus of such discussion has been on the societal benefits and costs of such programs (Jonsen, 1973).

Studies have explored the physical, psychological and social experiences of people whose extension of life implied the necessity of accepting long-term dependence on a mechanical device. They have clearly indicated that the personal impact of this adjustment is profound (Roessler & Bolton, 1978).

Persons using equipment as diverse as cardiac pacemakers (Price, Obel & Millar, 1980), iron lungs (Dawes, 1958), positive pressure ventilators (Tabori, 1971), hemodialysis machines (Baldursson & Brattstrom, 1979), and constant infusion pumps (Malcolm, Robson, Vanderveen & O'Neil, 1980) have noted to experience varying degrees of stress (Lohman, Vages, Mauter, Rath & Thomas, 1979). Not only must patients make a major adjustment of the physical limitations imposed by the machine, but also they must adapt psychologically to the symbolic associations involved in replacing a vital organ with mechanical means (Progh & Tagiuri, 1954).

The amount of mobility permitted has been found to be a critical dimension in the psychological effects of using life-support equipment. When cardiac pacemakers, hemodialysis machines and ventilators were first introduced, patients were prevented from actively participating in many significant life roles due to restricted mobility imposed by the size, weight and power requirements of these machines (Holden, 1970). In the past ten years, the development of smaller, lighter and internally powered, portable respirators and other life-sustaining machines has enabled many individuals to avoid becoming immured and to participate in more active, nearly normal lives (Dobson, 1980).

Personal mobility is an essential dimension of human life, for mobility enables the person from birth to senescence to avoid harmful stimuli, communicate non-verbally, and participate in life-sustaining and life-enhancing activities. Conversely, constraints on mobility have been found to affect adversely the individual's physical, psychological and socio-economic health

(Barnes, 1952). Mobility level is a sensitive indicator both of health status (Carnevalli & Brueckner, 1970) and of rehabilitation potential (Wendland, 1952). The higher the level of mobility, the better the individual's health and the better his or her chances for rehabilitation when ill or injured.

In consideration of these factors, it would seem that any person dependent on a mechanical aid for survival should be given, and would desire, the opportunity to gain the greatest freedom of movement possible through the use of a compact and portable model (Lanauer, 1958). While many health professionals hypothesize that increased mobility would be a universally desirable goal, it has not been found to be the case in practice. As an example, when a Canadian group of patients who were dependent on long-term mechanical ventilation (LMV) due to respiratory paralysis were given the opportunity to obtain a portable mechanical ventilator (PLMV), not all accepted the offer (Alcock, Hildes, Kaufert, and Bickford, 1980).

This rejection of an opportunity to remove external constraints on mobility was surprising and suggested that other factors may be present which are psychologically more important to the individual than the desire for increased activity and freedom (Lipp, Kostoe & James, 1968).

The cost of restricted mobility is high, both on a personal and on a societal level. Persons entrusted with the care of those who use life-support devices on a long-term basis have the dual responsibility of optimizing the life-style of the individuals in their care, while limiting the human and financial losses to society. Both objectives can be realized more effectively if information is gathered and utilized which identifies the contributing factors



that determine choice behavior related to health-seeking behaviors. If those differences in the personality characteristics or perceptions of the respondents which contribute to the diversity of choice behaviors associated with the opportunity to increase mobility status can be identified, planning for the machine-dependent population can become more individualized. To have such knowledge would enable the health-care professional to facilitate those choices by the users of such machines which improve quality of life on the personal level, while reducing physical and financial dependence on the community (Alger & Rusk, 1955).

There is a paucity of information regarding the exercise of choice in the presence of limited mobility. Presently, the reasons for individuals making given choices, in this circumstance, are not clear. Some factors influencing choice behavior, identified in previous investigations of phenomena related to potential changes in mobility, include the person's pre-disease personality (Progh & Taguiri, 1954), the availability of social support systems (Barker, 1949), and the perceived relationship between behavior and the occurrence of certain events (Wright, 1968). A significant amount of evidence has been reported that this final factor, locus of control, is an important variable in determining choice behavior (Finlayson & Rourke, 1978).

Other writers have suggested that the degree of control which people perceive to have over important events in their lives is influenced by their feelings of helplessness (Mowrer & Viek, 1948), mastery (Ansbacher & Ansbacher, 1956), competence (White, 1958), hopelessness (Richter, 1959), alienation (Dean, 1969) and perceived locus of control (Rotter, 1966).

Locus of control refers to the degree to which an individual perceives events in his/her life as being the consequence of his/her own actions. When there is a high expectation that one's actions have a causal relationship with the produced consequences, one is said to have an internal locus of control. When consequences are viewed as unrelated to one's actions, and therefore beyond personal control, one is said to have an external locus of control (Lefcourt, 1976).

Results of previous studies have shown that individuals who believe that they control their own reinforcements will demonstrate more initiative in taking control of their lives than their externally oriented peers (Phares, Ritchie & Davis, 1968).

Several investigators have employed the concept of locus of control orientation to explore health related behavior. James (1965) studied choice behavior related to smokers; in 1966 Lefcourt explored the information seeking behavior in persons with tuberculosis; and in 1978, Wenerowicz and his colleagues studied the association of locus of control orientation and compliance to diet in hemodialysis patients. The role of this variable, in relationship to persons on long-term mechanical ventilation, has not been examined.

#### Purpose

The purpose of this study is to answer the question: does a statistically significant association exist between the internal-external locus of control scores and the willingness to accept or reject the use of a portable long-term mechanical ventilator (PLMV)?

Based on the findings of earlier studies of choice behavior and orientation of locus of control, the major tenet of this study is that orientation of the locus of control will polarize in a direct relationship with specific choice behaviors.

### Hypothesis

The hypothesis of this study is that a positive association will be found between internal orientation of locus of control and the expressed choice to use a portable long-term mechanical ventilator. Those with external orientation of locus of control will be less likely to accept the use of a portable long-term mechanical ventilator.

### Definition of Terms

The major terms and concepts used in this study are as follows:

Choice Behavior: Choice behavior refers to the individual's decision to choose or reject portability in using a long-term mechanical ventilator when given the option to do so.

Long-Term Mechanical Ventilator (LMV): It is a machine that enables an individual to maintain adequate ventilation for an extended period of time when his/her own respiratory efforts are inadequate due to injury or disease.

Portable Long-Term Mechanical Ventilator (PLMV): It is a specially designed model of LMV which allows portability due to reduced size, weight and modified power requirements that can be supplied by an internal, rechargeable battery.

Acceptance of PLMV (current): Subjects using a PLMV at the time of the study were included in this group (n=7).

Acceptance of PLMV (future): Subjects who were not using a PLMV at the time of the study, but consented to future use were included in this group. These persons will commence to use PLMV pending their completing a brief training period (n=6).

Non-acceptance of PLMV: Subjects included in this group were not using a PLMV at the time of the study and would not consent to its use in the future (n=7).

## CHAPTER II

### THEORY AND REVIEW OF LITERATURE

A review of the literature on locus of control indicates that a vast amount of research has been focused on this concept since it was introduced by W. H. James in 1957. Over six hundred articles have been written on the topic. A growing number of these articles have considered this concept in the context of health-care related behavior. One (Wenerowicz, Riskind & Jenkins, 1978), has dealt with this construct in relationship to mechanical life-support systems specifically.

The general findings of the locus of control research suggest that the individual who is identified as having an internal locus of control will be more likely than the externally oriented individual to respond in a certain, predictable way in a variety of settings. For example, a feeling of greater internal control over what happens in life is likely to make a person feel less anxious, more confident and generally receptive to new experiences. The research on locus of control in the health-care setting has generally supported the assumption that such feelings tend to make the internally oriented individual a responsive patient, that is, a person who is more likely to take an interest in what is happening to him or her.

In the following section the major findings pertinent to internal-external locus of control are discussed. Then, the specific studies in which this concept is explored in a health-care related setting are reviewed.

### Theoretical Perspective on the Concept of Locus of Control

Although the locus of control concept was introduced by James (1957), Rotter has reported most other developmental work on the construct. Rotter defined the control construct as "a generalized expectancy, operating across a large number of situations, which related to whether or not the individual possesses or lacks power over what happens to him" (Rotter, 1966 p. 84).

As Rotter points out, this analysis of perceived control has emerged out of social-learning theory. It was developed in response to the observation that there seemed to be a systematic pattern of variation in the increase or decrease in expectancies following reinforcement, related to the characteristics of the individual taking part in the experimental situation (Rotter, 1975).

A comprehensive paper by Rotter, Seeman and Liverant (1962) described the construct as distinguishing individuals according to the degree to which they accepted personal responsibility for what they experienced. Those characterized as having internal control, or being internals, perceived positive and/or negative events as a consequence of their own action, and thus under personal control. On the other hand, those characterized as having external control, or being externals, perceived these events as unrelated to their own behavior, therefore being beyond their personal control.

This perspective is also related closely to the concept of alienation, which has its roots in sociological theory. According to Seeman (1958) alienation has five key meanings: powerlessness, meaninglessness, normlessness, isolation and self-estrangement. Here the concept of powerlessness is particularly relevant in that the individual feels powerless, and hence, alienated, because a discrepancy is experienced between expectations for control and

desires for control (Dweck, 1975). This notion is closely related to Rotter's description of an externally oriented person who feels that control over the reinforcement is dependent on external conditions, such as chance, luck or the manipulation of others, rather than self-generated efforts to effect control.

The concept of meaninglessness is related to the locus of control concept, since the individual who experiences meaninglessness has a low expectancy that satisfactory predictions can be made about future outcomes of behavior (Seeman, 1958).

To test the relationship between the locus of control concept and specific variables, investigators have frequently employed a version of the James Internal-External Control Scale, with an updated format published in 1980. This scale has been modified and adapted by others, Rotter's being the most frequently cited modification (Joe, 1971). The scales measure the subject's perceived locus of control.

There have been many studies conducted which explored the relationship of this construct and several other variables. Researchers have examined the relationship between internal-external control and task structure, personality traits, learning and achievement, conformity, risk taking, response to aversive events, reactions to social influences, cognitive activity, psychopathology and anxiety. In addition, data has been collected on the relationship between internal-external control and ethnicity, class, age and intelligence (Joe, 1971). Major findings are highlighted in this section.

In the case of task structure, researchers have focused on the effects of locus of control and performance. In a 1957 study it was found that subjects who were informed that their success on a task was due to skill, changed their expectancies more frequently and more in the direction of previous experience than those who were told that their success was due to luck (Phares, 1957). James and Rotter (1958) found that subjects were more likely to continue a task if they perceived a degree of control over the outcome. Subjects performing task which required skill to succeed were more likely to perceive that their failure was due to their own lack of ability rather than to changes in the operation of the task itself. Hence, they continued with an intent to improve their performance, whereas subjects, whose success depended on chance, gave up much earlier, perceiving no control over the outcome (James & Rotter, 1958).

In the studies related to achievement, researchers have generally found that internals were more likely to perform better. For example, Messer (1972) found that boys who assumed responsibility for success were more likely to obtain higher grades and higher achievement test scores. Karabenick, also in 1972, found that internals were more likely than externals to value success when tasks were difficult, presumably because they viewed themselves as more contributory to the success. By contrast, when the tasks were perceived as being easy, the externals tended to value success more. Others have found that in response to the contingencies of the situation, internals tend to adapt more to task demands by varying their performance to a greater degree than externals. For example, in two separate studies, Julian and Katz (1968), and



Gotali and Bialer (1973) found that internals tended to take more time in answering difficult problems, whereas externals varied less in the amount of time given to each problem, suggesting that they were less adaptable to task demands.

When risk-taking behavior was examined, internals differed again from externals in that internals tended to be more cautious and more realistic in the way they dealt with risks. Liverant and Scodel suggested in their study, published in 1960, that this was so because internals believed that they could exert a modicum of control over the task situation, whereas externals believe the outcome was due to chance only. In testing this hypothesis, using betting on the outcome of thirty trials of dice throwing, it was found that the internals were significantly more likely to choose bets of intermediate probability, and less likely to make extremely high or low probability bets, thereby showing a greater tendency toward self-regulation with regard to objective probabilities (Liverant & Scodel, 1960).

Internals have also been found to be more independent, and less likely to conform (Odell, 1959). This finding was supported by a similar study, conducted by Crowne and Liverant in 1963. According to Crowne and his associate, this result occurred because the conformer had low expectancies of success in socially evaluative situations. The external was more apt to conform while the internal was more sure of his/her own abilities to control the situation and thus feel freer to be independent.

Findings from studies of locus of control in relationship to failure and aversive events have been consistent with the interpretation that the externally oriented person reacts in certain ways because he/she has less confidence. For example, Strickland (1965) has found that externals were more likely to be concerned with failure than with achievement in a task situation, and were more likely to demonstrate passivity in the face of frustration. Efran (1974) found that externals also were more likely to remember failure than internals.

In the case of aversive events, Glass, Singer, Leonard, Krantz, Cohen and Summings (1973) found that subjects who believed that their behavior could reduce effectively the length of time a shock lasted, rated shocks as being less painful. Golin (1974) found that subjects able to control the shocks they received did not experience as deleterious an effect upon complex task performance as did subjects who were not controlling the stimuli.

When Hiroto (1972, 1974) investigated escape and avoidance behavior, he found that internal subjects were more apt to make avoidance responses, and were quicker to learn than were externals. He also found that subjects thinking they needed more skill to avoid the aversive stimulation were more successful than those who saw their success dependent primarily on chance. Again, these findings substantiate previous results in which internals were consistently more successful in managing in situations within a variety of settings.

Numerous studies have data to indicate that internals translate feelings of control into exercising greater influence over their environment in numerous ways. For example, in a series of studies, Phares (1965), Seeman (1963), and

Seeman and Evans (1962) found that internals exhibited more initiative in their efforts to attain goals and to control their environment than did externals. Phares, Ritchie and David (1968) found that internals were more willing to remedy personality problems than were externals. In a 1970 study, MacDonald found that internals were more likely to practice some form of birth control.

This feeling of control also translates into a greater independence from a variety of social influences. The greater likelihood of externals to conform has been cited. In addition, it has been found that externals are more likely than internals to be influenced by social cues, and to allow these cues to have an effect on their activities and attitudes. As an example, Sherman (1973) found that internals were more readily influenced to change their attitudes by their own thinking about matters than externals. Externals, on the other hand, were more likely to be influenced by the persuasive arguments of others.

In studies on cognitive function, researchers have concluded that internals are more cognitively aware than externals, and more open to seeking and accepting information that can help them deal with various tasks and situations (Lefcourt, 1976). Sordoni (1975) found that internals were more relaxed and accepting when confronted with dissonance in an experiment than externals. Lefcourt, Gronnerud & MacDonald in 1973 found that internals were more ready to accept the uncertainty inherent in an experimental task, and to acknowledge and accept discrepancies between the experimenter's stated purpose and the actual intent.

Other research has indicated that internals are better able to deal with stressful situations. They appear to be less frequently subject to a variety of psychopathologies and tend to experience less anxiety than those who are externally oriented. This was borne out by the findings of Butterfield in 1969, who also noted that external orientation of control was related positively to internally directed punitive responses to frustration, and negatively related to constructive reactions to frustration, and negatively related to constructive-reactions to frustration-inducing situations. Conversely, the internals were more apt to respond in a constructive and nonpunitive way. In two subsequent studies, Hountras and Scharf (1970) and Platt and Eisenman (1968) found that externals described themselves more frequently as anxious, were less able to show constructive responses in overcoming frustration, and more concerned with fear of failure than with achievement; in contrast, internals described themselves as less anxious, more constructive in overcoming frustration, and were more concerned with achievement rather than failure.

Studies of responses to stressful situations outside the laboratory produced similar results. For instance, in a study of medical students, McNair, Loor and Droppleman (1971) observed that internals rated themselves as less tense, anxious, depressed, hostile, fatigued and confused than externals in all four classes from first to fourth year. They noted that internals remained more enthusiastic and vigorous in the more stressful second and third years of school than did externals.

Data have been collected that suggest a relationship between locus of control and several well-studied personality variables. Hersch and Scheibe (1967) examined the relationship between scores on the California Psychological

Inventory (CPI) and orientation of locus of control. They found that internally oriented subjects were significantly higher on a number of personality characteristics: dominance, tolerance, making a good impression, sociability, intellectual efficiency, achievement and well-being. Holden (1958) and Simmons (1959) observed a correlation between locus of control and the California F Scale, in which they found that externals tended to score higher in authoritarianism, and in particular, were more likely to see the world as containing powerful forces which they were unable to influence. This relationship, between external control and authoritarianism, was also noted by Rotter, Seeman and Liverant (1962).

Other researchers have reported that externals score more highly in dogmatism (Clouser & Hjelle, 1970), are more likely to report experiencing a debilitating anxiety and neurotic symptoms (Feather, 1967), or to experience fears of death (Tolor & Reznikoff, 1967). In externals, these unpleasant feelings are attributed to external sources and tend to be associated with more frequent expressions of aggressiveness and hostility (Williams & Vantress, 1969).

Ethnic origin, economic class, age and intelligence levels were found to have a consistent association with orientation of locus of control. The overall conclusion drawn from related studies by Lefcourt (1976) was that those individuals who are able, due to position and group membership, to obtain conventionally valued outcomes leading to personal satisfaction are more likely to have an internal control orientation. Thus, in general, individuals who are white, middle class, older (but not too old), and more intelligent are

more likely to hold internal control expectancies, while members of minority and lower income groups with limited opportunities are more likely to hold fatalistic, external control beliefs.

Culture also appears to be implicated, as well as economic class and race. Graves reported in 1967 that the Ute Indians were more external than a group of Spanish-Americans, even though the Utes had a higher-than-average living standard. Interpreting these results, Graves explained that the Ute tradition put a great deal of emphasis on fate and on unpredictable external forces; thus their culture fostered the development of a more external outlook.

Rotter (1971) also suggested that social trends may influence feelings of internality and externality. It was observed that the average score of internals (when measured in a population of college students) declined from 1962 to 1971. Rotter attributed this change to the turbulent political climate prevailing during these years in which college students felt more powerless to control their own destinies.

A major personal reverse can contribute to feelings of externality as well. For example, unemployed males have been found to be more external than college students (Rotter, 1971).

In summary, the research on locus of control has shown that internals and externals have very different ways of responding to the world, depending on their perception of being in control or being controlled by external forces. Internals were consistently found to be more independent, more likely to persist in tasks, more confident, more realistic in dealing with risks, more optimistic about success, more open to new information, and better able to

deal with stress. They were more likely, also, to be in a circumstance where they had more power and control than were those scoring in the external range. Externals, in contrast, tend to take fewer risks, discontinue tasks more readily, anticipate failure and are more easily stressed.

### Locus of Control Construct and Health-Related Behaviors

Current research exploring the relationship of locus of control and health-related behaviors has examined a number of factors: beliefs about health, recovery success, habits and addictions, the effects of experiencing hospitalization, certain disease conditions and emotional adjustment. Some of these studies examined specific patient populations, such as those suffering from poliomyelitis, tuberculosis or schizophrenia. Very recently, one study looked at the relationship between locus of control orientation and the use of life support machines (Wenerowicz, Riskind and Jenkins, 1978). Major findings concerning health-related behavior and locus of control construct will be reviewed.

In general, the behaviors of internals and externals in a healthcare setting were found to be consistent with behavior patterns observed for these two groups in a non-health-care related situations. For example, numerous studies have shown that internals are more likely to confront problems directly than externals through various types of behaviors, such as information seeking. In a study conducted in 1967, Davis and Phares found that internals were superior to externals in seeking information necessary to solve both present and future problems. Seeman and Evans (1962) identified the same pattern of behavior in a health-care setting. They found that hospitalized tuberculosis

patients, who were internals, knew more about their own condition, asked more questions of doctors and nurses, and wanted more feedback and information than did externals. In a subsequent study on health related information seeking, Wallson, Maides and Wallston (1976) found that internal subjects, who valued health highly, sought to receive more pamphlets about specific health threats (in their study: hypertension), after being exposed to a mildly threatening written message about it, than did externals. In their view, the internal subjects interested in health showed this greater interest due to their feelings that they could have more control over their own health.

Other research (Gorman, 1971; Kirscht, 1972) has shown that subjects with internal control expectations tend to see themselves as less vulnerable to ill-health conditions and are more likely to believe that they can take effective actions to ward off disease. For example, in a study of children between seven and eighteen years of age, Gorman found an inverse relationship between beliefs about adaptive health actions and perceptions of vulnerability for internals. Those with low internal control were more likely to see themselves as vulnerable and less able to resist ill health. The relationship between locus of control, control of health, perceptions of disease and health-related practices were looked at among non-academic university staff and similar results were found (Krischt, 1972). In this case, Gorman exposes his subjects to films on several catastrophic diseases (cancer, tuberculosis and heart disease) and questioned them about their feelings of vulnerability, ability to ward off disease and the perceived severity of selected health conditions. He found that expectancy for control was related to a belief in the efficiency



of action to ward off disease, and to beliefs that general health was protectable. Those with internal locus of control orientation tended to regard themselves as less vulnerable to conditions of ill health, specifically to cancer, tuberculosis and to auto accidents.

Internals also appear to have more control over habits. In a study on smoking behavior conducted in 1965, James, Woodruff and Werner found that both male (n=102) and female smokers (n=123) were more likely to be externally controlled than nonsmokers (male,83; females 149). Moreover, they found that males who gave up the habit had a higher internal orientation (35.65) than those who did not (39.71). It was also identified that those smokers who gave more credence to the Surgeon General's Report on the negative effects of smoking were more likely to be internally oriented.

Some of the health-related research has investigated the effects of internal/external orientation in individuals with serious physical or mental disabilities. The findings of such studies have been consistent with the findings for healthy, non-disabled individuals. Goss and Moroski (1970) studies the results of the Minnesota Multiphasic Personality Inventory (MMPI) in an alcoholic population (n=262) in association with their locus of control orientation. They found that those alcoholics who were more internal reported less anxiety, helplessness, alienation, depression and clinical pathology on the MMPI.

In other studies, researchers have looked at the relationship between acceptance of an emotional or physical disability and internal or external locus of control. For example, physically disabled externals were studied to see whether they were more likely to have a modified perception of their disability

than internals with similar handicaps. The findings of this study of thirty matched individuals in each of the two groups were that the externals were less likely to mitigate their disability than the internally controlled individuals and those scoring in the middle range of the I-E dimension (Lipp, Kolstoe, James and Randal, 1967). These investigators have suggested that the internally controlled individuals may perceive a physical disability as more threatening since it curtails their customary control of events.

MacDonald and Hall (1969) explored the relationship between locus of control and the ratings of various types of disability factors as seen by fifty non-disabled graduate students (30 males and 20 females). They found no significant difference between the externals and internals in the way they related to internal, sensory or cosmetic disorders. However, they did find that the internals rated emotional disorders as more debilitating than did the externals. In their view, the internals considered emotional disorders more threatening, since such disorders implied a loss of inner control.

Some of the research has suggested that certain types of disability, if not most disabilities, are associated with an increase in externality. This might be expected, since disabled or ill persons experience less control over their own environment, either because they cannot cope emotionally or because these impairments prevent participation in many life-supporting or life-enhancing activities. In one study, schizophrenics and non-schizophrenics were compared, using the James-Phares Scale of Locus of Control and the Bailer-Cromwell Locus of Control Scale. The findings were consistent on both scores: schizophrenics were found to be significantly more external than non-schizophrenics (Crommwell, Rosenthal, Shakow, and Zahn, 1961). In another

study, Shybut (1968) found that prolonged hospitalization alone may increase the individual's external control expectancies by reducing the belief in attaining long-range goals.

The increase in externality, when one is ill or disabled, may be associated with the psychological dynamics involved in the loss of mobility experienced, and with the changed body image generated by such conditions. Research, studying the effects of poliomyelitis, supports this apparent relationship. Glud and Blane in 1958 in a narrative article reported extensive changes in the body image of patients with respiratory paralysis due to polio, and suggested that the illness caused the patient to go through an extended period in which he or she had to adjust to and integrate this new body-image. In an earlier study, Bender (1934) observed that discrepancies between body image and structure may have disorganizing psychological effects on an individual. Grayson in 1951 found that patients experiencing a body deformity or amputation went through a period of withdrawal. Concurring with earlier explanations offered by Glud, Grayson theorized that the ego was trying to maintain its integrity in the face of a catastrophic disturbance to the body's image. After the acute phase, patients tended to be depressed or overtly hostile for a period of time. Many exhibited fears of annihilation by events over which they had no control, electrical or mechanical failure of their respirators being the most consistently voiced concern. Gradually, the patients tended to reorient attention to the still-functioning parts of the body, and tended to adapt to living in a more physically limited world.

The research on body image and mobility is important to review in association with locus of control studies in that a direct correlation has been

found among factors of limited mobility, impaired body image, and external orientation of locus of control (Cromwell, Rosenthal, Shakow and Zahn, 1961).

It has been found also that internally oriented individuals are more apt to resist loss of body mobility, because they find the resultant loss of control and impaired body image more threatening than do externals (MacDonald & Hall, 1969).

Robinson and Finesinger (1958) offered possible theoretical explanations for the emotional problems observed related to the polio patient's lack of mobility. In their view, the individual becomes frustrated when motor function is reduced or impaired by illness, not only because the range of physical activity is limited, but also because the symbolic communication inherent in body movement is lost as well. They also noted that modification of body movement is lost as well. They also noted that modification of body image became particularly difficult for those patients who showed the greatest discrepancy between values held prior to the disease and those values adopted by necessity within the confines of their new limitations.

The problems of employability due to the disablement, noted by Garrett (1958), also contribute to the individual's changed concept of self, in that employment status is such an important part of most individuals feelings of worth. It is a current economic reality that the more limited an individual's mobility, the less likelihood there is of being employed. As in Garrett's subjects, the lack of employment augmented a feeling of diminished control, causing a shift towards externality in the severely restricted individual. Although this shift has been demonstrated, (Myers, 1958), the degree of it

could be modified by other factors. Robinson and Finesinger (1958) found that individual adjustment patterns prior to experiencing the disability, past exposure to medical and hospital treatment situations, prior role in the family, along with the attitudes of family members towards the limitation all had a measurable effect on the perception of control.

A person's locus of control orientation prior to and during the period of disability affect this adjustment process and influence how the immobilized person behaves in the clinical setting. Wenerowicz, Riskind and Jenkins in 1978, investigated the association between locus of control and compliance to dietary restrictions and medication-taking in a hemodialysis unit. Data was collected on 19 unselected chronic hemodialysis patients, with an age range of 19 to 70 years. Locus of control orientation was identified and compliance with treatment was assessed by pre and post dialysis measurement of serum level of potassium, phosphorus, blood urea nitrogen and weight gain. It was found that patients with an internal locus of control were more compliant, as measured by this criteria, with therapeutic requirements. The investigators suggested that the reason for this difference was that internals are more likely to respond to stressful situations by taking an active and participatory role in affecting what happens to them, in keeping with their need for mastery and control. Thus, they are more able to comply with medical recommendations that require active participation and consistent adherence to directives.

As suggested by this literature review, locus of control orientation is a major non-physical factor. Accordingly, the implication is that by identifying, and possibly influencing the individual's direction of locus of control towards a more active participatory attitude (that is internality), a greater degree of

the person's rehabilitation potential can be actualized.

From the perspective of the professional involved in the assessment, planning and implementation of care for such persons' knowing about the patient's attitudes, orientations and intrinsic mode of behavior is important. Research on rehabilitation programs for the disabled consistently noted a wide discrepancy among the assessed rehabilitation potential, the available techniques to assist the individual, and the degree of rehabilitative success (Safilios-Rothschild, 1970). This discrepancy is the result of non-physical factors of a behavioral or psychological nature, in that the degree of the actual limitation on activity represents a combination of the person's physical disability and his/her behavioral reaction to it.

In summary, although there may be a shift towards externality as a result of the disabled patient's condition, those persons who have a more internally oriented locus of control tend to comply more readily than those who are more externally oriented. These findings on the association among health-related behaviors, attitudes and locus of control, in turn, reflect a similar pattern of association reported in the study of individuals in other settings.

### CHAPTER III

#### METHODOLOGY

##### Research Setting and Sample Selection

The study was conducted among a patient population which was living in a residential setting in a municipally owned hospital in Winnipeg, Canada. The persons in this group had varying degrees of paralysis due to permanent neurological damage, the result of poliomyelitis contracted in the 1950's. In addition to the varying levels of immobility, they were all dependent on some form of electro-mechanical device to augment and/or sustain their breathing efforts at a level which is compatible with life.

Hospital records yielded the names of those persons who were dependent on long-term mechanical ventilators (LMV). The following criteria were used to select all the subjects for this study. A participant in the study had to:

1. Depend on a mechanical aid (or aids) to maintain adequate respiratory function;
2. Use this aid (or aids) for at least twelve hours a day;
3. Use this aid (or aids) for at least one year prior to the commencement of this study;
4. Be able to understand and speak English.

A non-probability sample of convenience was used. All persons in this residential facility who met the above criteria were invited to participate. The total sample was limited by the uniqueness of this group to twenty-one individuals. Consent was obtained from twenty persons, with one potential subject declining to participate.

There were several factors which made this group highly suitable for this study. First, all persons participating in the study lived on the same unit of the residential care facility, most of them for over twenty years. They formed a relatively uniform group in terms of their age, geographic area of origin, and initial causative factor for their respiratory paralysis. Secondly, all experienced a high degree of physical immobility as the combined result of residual muscle paralysis and dependence on cumbersome equipment. Selecting a group that was homogenous on a number of key characteristics enhanced the validity of the findings by removing some potentially confounding variables.

#### Procedure of Data Collection

Before entering the clinical setting and asking subject to consent, the project was approved by the Committee on Human Research, University of California at San Francisco and by the Board of the Winnipeg Municipal Hospitals. In approaching and including the subjects, precautions were taken to ensure the privacy of persons, maintain the confidentiality of data, and conform to ethical standards of research practice involving human subjects. A copy of the consent form used is included in Appendix A.

The subjects were asked to respond to the James Scale of Internal-External Locus of Control on an individual basis, in a private environment within the clinical facility. In the case of subjects who were unable to write due to extreme motor dysfunction, they responded to the items verbally, and the investigator recorded the responses.

In addition to completing the instrument, subjects stated their age, sex, current and anticipated mode of ventilation. Since each subject had



access to and could benefit potentially from the use of a portable mode of ventilation, this last statement was used to identify choice behavior related to the acceptance or non-acceptance of a portable long-term mechanical ventilator (PLMV). Those who indicated that they are currently (at the time of the study) were using a portable machine, or were anticipating using one, were considered to have chosen to receive such a device; those who indicated that they were currently not using and were not planning to use one in the foreseeable future, were considered to have chosen not to utilize a PLMV.

#### Instrument

To measure the expectancies of internal versus external locus of control, the James Scale of Internal-External (I-E) Locus of Control was employed for this sample population. This instrument was selected over several other possible tools that measure I-E orientation because of its appropriateness to this group of individuals. Unlike other conceptually similar scales, the James Scale has no questions related directly to levels of mobility. The absence of such questions ensured that individual variations in levels of mobility within this group did not affect the responses.

In addition, this instrument could be completed with relative ease by persons with minimal motor function. While this group had special physical limitations, no modification of the instrument was necessary thus the utility of the instrument as a comparative tool was maintained.

The James Scale of I-E Locus of Control was developed within the framework of Rotter's Social Learning theory and is based on previous conceptual work by Phares (1957). The scale provides a measure of the extent to which a person perceives events as determined by intrinsic factors versus the extent to which one views events as being determined by extrinsic factors.

The scale consists of thirty declarative statements, interspersed with thirty filler items. It is a Likert-type scale, with four categories of response for each item: strongly agree (3), agree (2), disagree (1) and strongly disagree (0).

Total scores can range from 0 to 90. This test is scored in the direction of external control, that is, the higher the score, the more externally oriented the person; conversely, the lower the score the more internal the orientation (James, 1965).

In reviewing discriminant validity, Rotter (1966) found low correlation with intelligence or political affiliation. Non-significant correlation between I-E scores and three different measures of intelligence was found by Hersch & Scheibe, in 1967. Sex differences in mean score values were related to sex-role identification and geographical differences (Feather, 1968).

While this instrument has an extensive theoretical base, no studies were found that evaluate construct validity.

When the scale was subjected to statistical evaluation using a sample of two hundred female and two hundred male university students, it was found that normal distributions prevailed in both sexes and that there were no significant sex differences. The mean score for females was 39.28, with a standard deviation of 10.13, and for males the mean score was 40.27, with a standard deviation of 9.84 (James, 1981).

Studies to assess the reliability of this scale have indicated that it is consistently reliable (Hersche & Scheibe, 1967). When the two most widely used locus of control scales, the James and the Rotter Scales were compared for reliability, Kuder-Richardson reliability coefficients were calculated for

both scales. The coefficient for the James Scale was .78, and for the Rotter Scale the finding was .72 (James, 1981).

A number of studies have indicated that effects of response set and social desirability are minimal. Non-significant correlations between I-E scores and filler item scores, as well as low correlation between I-E scores and such measures as the Marlowe-Crowne Social Desirability Scale and the Control Scales on the MMPI have been reported (James, 1973, 1979; McDonald, 1973, 1974).

A copy of the James Scale of I-E Locus of Control is included in Appendix B.

## CHAPTER IV.

### DATA PRESENTATION & FINDINGS

The main objective of this section is to present the data obtained in this study and to report an elementary statistical analysis of that data. The research question is the following: does a statistically significant association exist between the internal-external locus of control scores and the expressed willingness to accept or reject the use of a PLMV?

First, a graphic presentation of the complete data set is presented.

To analyze the main statistical issue, the determination of any possible association of internal-external locus of control scores with the acceptance or non-acceptance of a PLMV, the Chi-square test of independence was employed. This non-parametric test was conducted by comparing two sets of frequencies; those observed in the collected data and those which would be expected if there were no relationship between the two variables. The expected frequencies were calculated on the basis of the observed marginal frequencies. The marginal frequencies were those on the "margins" of the contingency table, that is the row and column totals.

Three different Chi-square tests were conducted. One test utilized the whole data set. This test is naturally the most important part of the study. Of secondary, but still significant interest, were the two other Chi-square tests which focused on the male and the female sub-groups of the sample population. The conclusions drawn from these tests are discussed in Chapter V.

### Data Set and Descriptive Analysis

The basic source of data analysis was the set of information obtained from the twenty subjects. These findings are presented in Table 1. Individual responses are identified by case number, followed by the subject's sex, age, status of acceptance of a PLMV, and the score achieved on the James Scale of Internal-External Locus of Control. In this table, locus of control scores are presented in an ascending order toward externality.

Case Number N=	Sex		Age				Acceptance of PLMV			Locus of Control Score
	M	F	40-49	50-59	60-69	70-71	Current	Future	Non-Acceptance	
15	+				+		+			31
16		+		+			+			34
14	+		+					+		35
10		+			+		+			37
20	+			+			+			38
17	+			+			+			38
9		+		+			+			41
2	+			+				+		44
8	+		+					+		46
19	+		+					+		46
3	+			+					+	50
7		+		+					+	51
12		+	+						+	51
13		+	+					+		51
11	+		+					+		52
5	+		+					+		54
4	+		+						+	56
1	+		+						+	57
6	+		+						+	59
18		+				+			+	75

Table 1. Internal-External Locus of Control Scores and Subject Characteristics of Sex, Age, Status of Acceptance of PLMV.

In the two following figures (Figures 1 and 2), locus of control scores were illustrated as functions of sex and age, respectively. In Figure 1, five males and three females had scores below the median (45), indicative of internal orientation; eight males and four females had scores above the median value, indicative of external orientation.

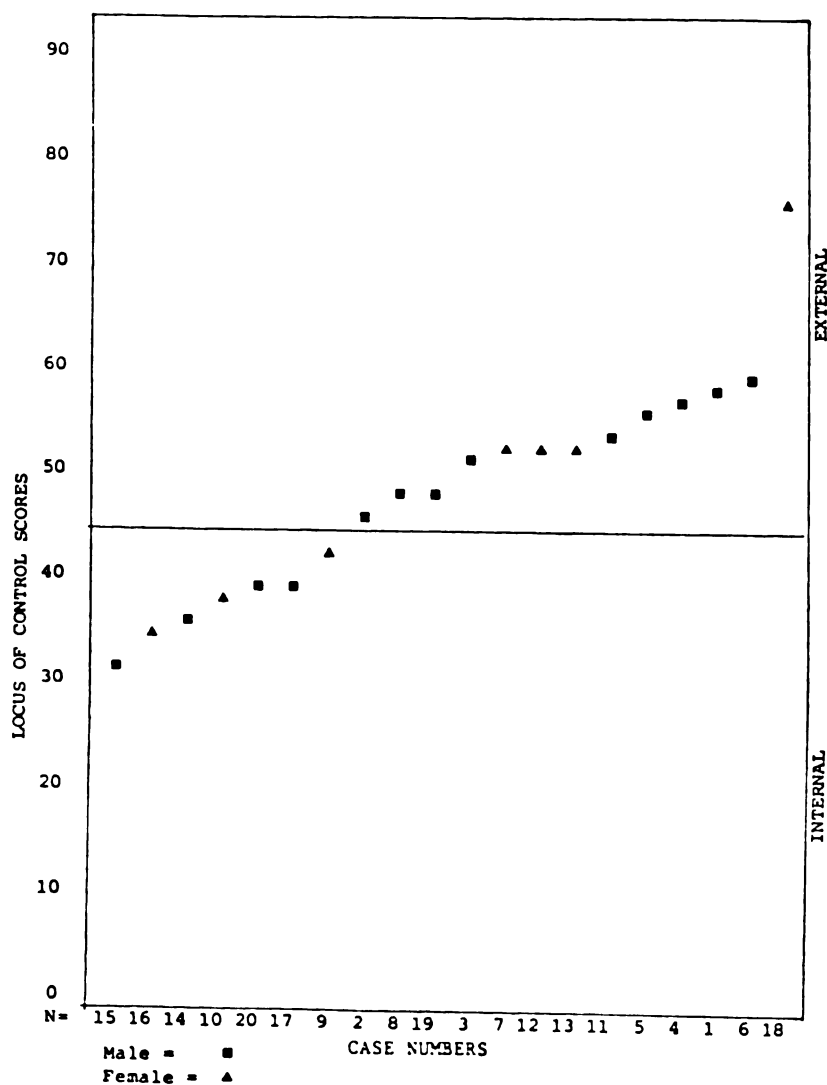


Figure 1. Individual Internal-External Locus of Control Scores as Function of Sex

In depicting the age-related findings in association with locus of control scores, the spread of scores over the age ranges shows no clustering of subjects, either in the internal or in the external field of orientation. The only outstanding finding is that the highest score (that is, the most external score) was obtained from the oldest person in the sample population. This is in keeping with previously suggested findings that extremes of age ranges, either the very young or the very old, tend to score in the external range of values (Lefcourt, 1976).

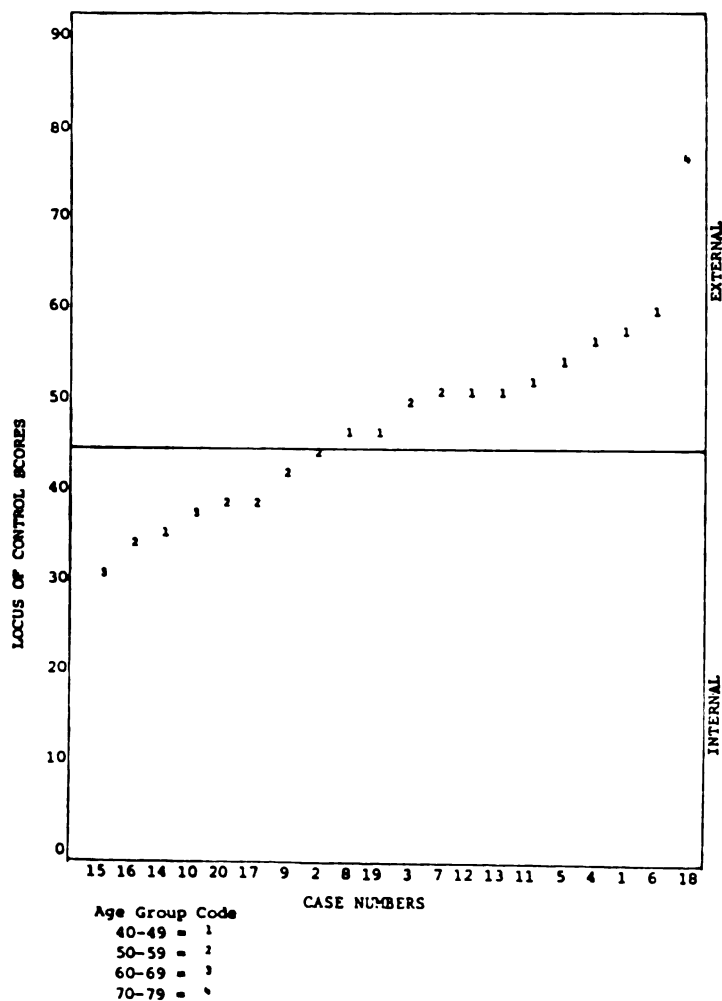


Figure 2. Individual Internal-External Locus of Control Scores as Function of Age.

In the figure illustrating the association of locus of control scores and choice behavior related to the use of a PLMV, a clear pattern emerges (Figure 3). All subjects who accepted PLMV, and are currently using it, scored in the internal range of locus of control; all persons who indicated non-acceptance of the PLMV have scores in the external range of orientation. The association of locus of control orientation to the future acceptance of a PLMV was less

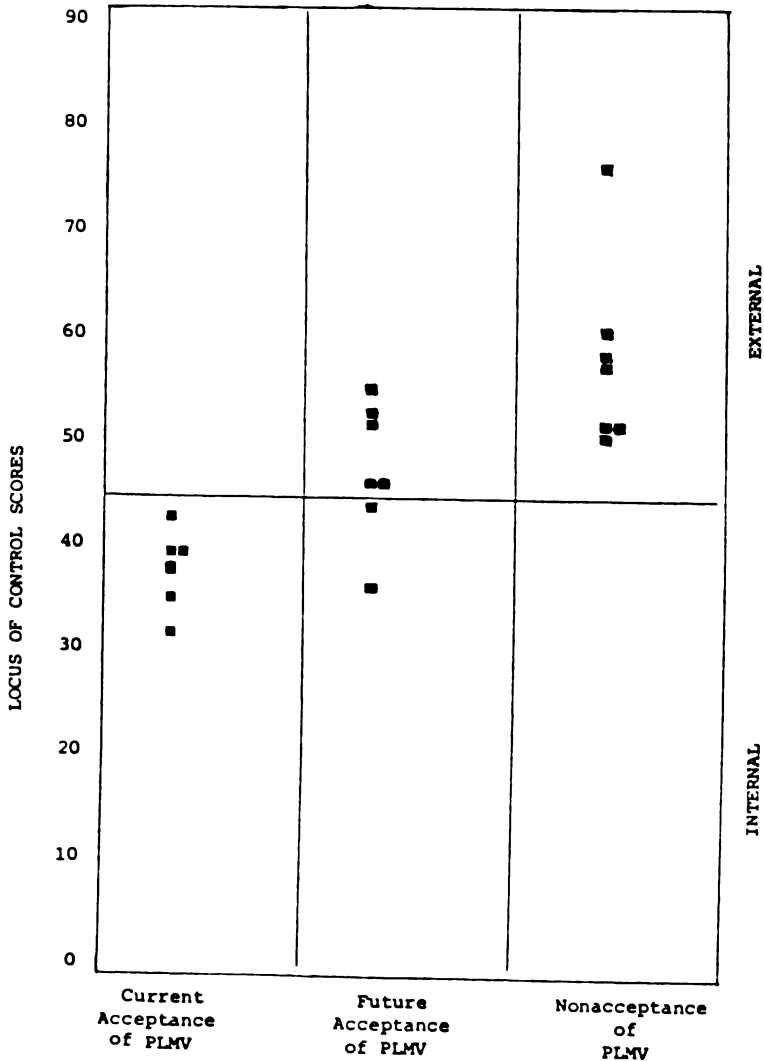


Figure 3. Internal-External Locus of Control Scores as Function of Acceptance of a PLMV



well defined. External orientation predominated in this group, with only two of the seven subjects indicating internal orientation. On the basis of this finding, the subjects indicating internal orientation. On the basis of this finding, the subjects who accepted the PLMV for future use were more like those who chose non-acceptance than the current users of a PLMV.

Values found for mean, standard deviation, minimum, maximum and standard error of mean for the I-E locus of control scores are summarized in Table 2.

Sample Characteristics	N=	Internal-External Locus of Control Score				
		Mean	Standard Deviation	Minimum	Maximum	Standard Error of Mean
<b>Sex</b>						
Male	13	46.41	9.03	31.00	59.00	2.50
Female	7	48.57	13.66	34.00	75.00	5.16
<b>Age</b>						
40-49	10	46.83	6.36	35.00	52.00	2.60
50-59	7	47.45	8.79	34.00	59.00	2.65
60-69	2	34.00	4.24	31.00	37.00	3.00
70-79	1	75.00	-	75.00	75.00	-
<b>Acceptance of PLMV</b>						
Current	7	38.71	6.67	31.0	52.0	2.52
Future	6	46.00	6.54	35.0	54.0	2.67
Non-Acceptance	7	57.00	8.66	50.0	75.0	3.27

Table 2. Subject Characteristics: Sex, Age, and Status of Acceptance of PLMV and Internal-External Locus of Control Data.

A t-test analysis found no significant sex related difference in the findings of these two studies. The mean value found within each age group was congruent with earlier findings that were reported by Lefcourt (1976).

The mean scores associated with sex were similar to mean scores found in a large sample of college students. In a recent study by James (1981) normal distributions were found for both sexes (n=200), with a mean score of 39.38 (S.D.=10.13) for females and a mean score of 40.27 (S.D.=9.84) for males.

The association of mean scores achieved with that of the population variables of sex and age were depicted in Figure 4.

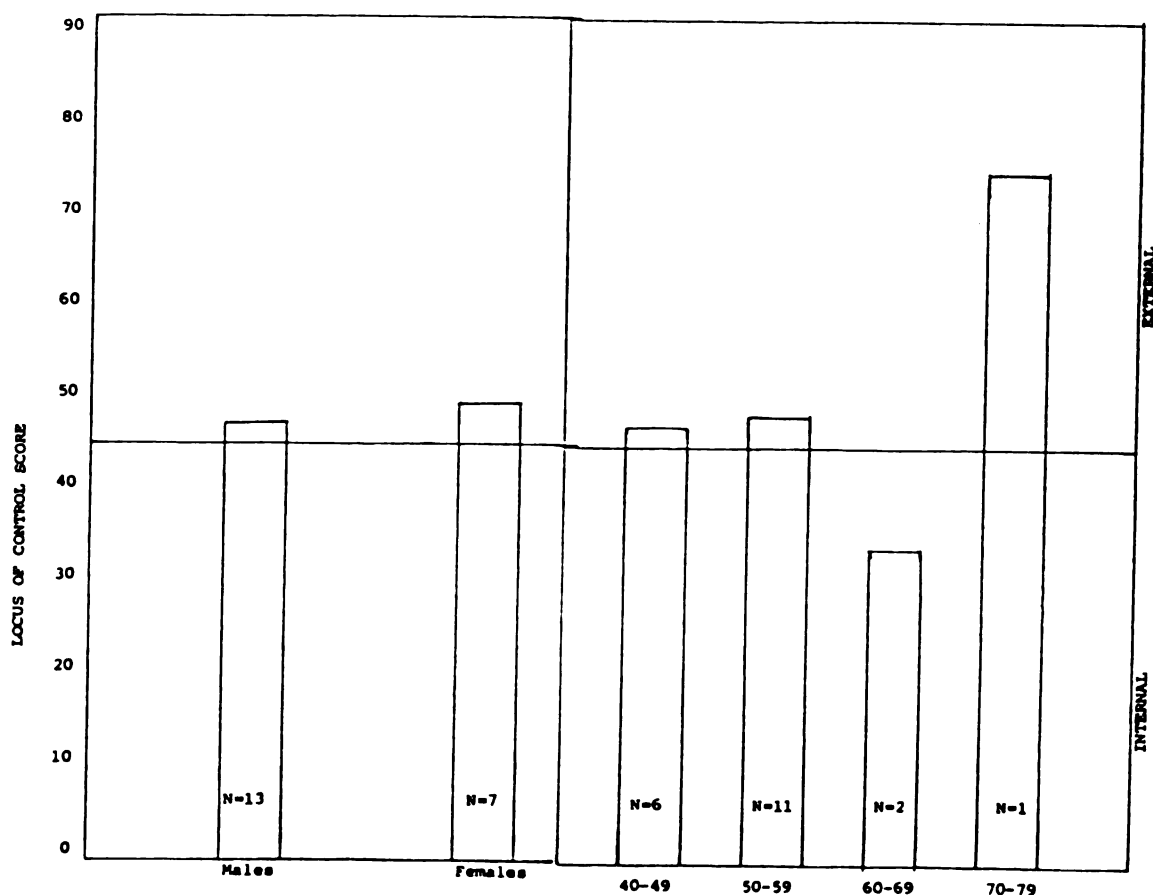


Figure 4. Mean Scores of Internal-External Locus of Control as Function of Sex, as Function of Age

The mean scores of internal-external locus of control as function of the status of acceptance of a portable long-term mechanical ventilator is illustrated Figure 5.

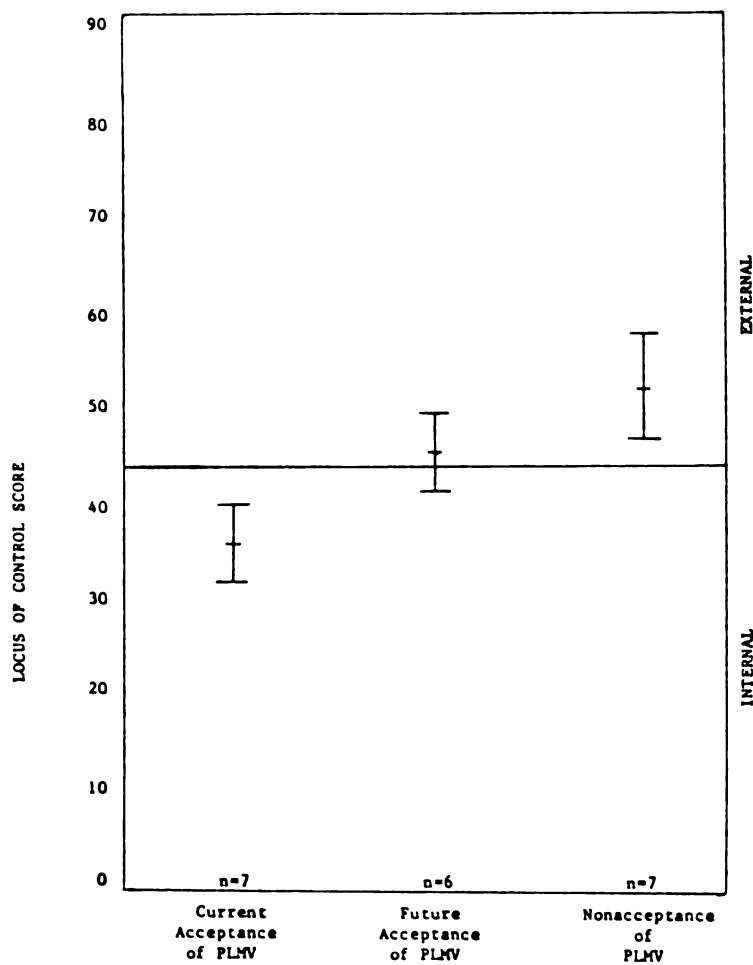


Figure 5. Mean Score of Internal-External Locus of Control as Function of Status of Acceptance of a PLMV

### Chi-Square Analysis

The primary analytical component of this study, the Chi-square tables, were constructed by utilizing the median values for Total, Male Only and Female Only population sub-groups, obtained through the use of the Stem and Leaf Plots.

The most useful application of the Chi-square statistical analysis is to determine whether significant differences exist between two dimensions of categorized data. In this study, the acceptance or non-acceptance of the PLMV has been placed in bivariate tables to be analyzed in relationship to the orientation of locus of control.

To identify the median points, Stem and Leaf Plots were constructed for I-E locus of control scores. This statistical device is a successor to simple histograms and has the additional advantages of greater graphic clarity. Also raw data is linked in a direct association with the statistical value derived (Mosteller & Tukey, 1977).

The findings of the Chi-square analysis, summarized in Table 3, are as follows:

A. Whole Population (n = 20) Median = 46

	n=	Locus of Control Scores < Median	Locus of Control Scores > Median
Acceptance of PLMV	13	10.0	3.0
Nonacceptance of PLMV	7	0	7.0

$\chi^2 = 10.72$        $df = 1$        $p < .01$

B. Male Only Population (n = 13) Median = 46

	n=	Locus of Control Scores < Median	Locus of Control Scores > Median
Acceptance of PLMV	9	6.5	2.5
Nonacceptance of PLMV	4	0	4

$\chi^2 = 5.76$        $df = 1$        $p < .02$

C. Female Only Population (n = 7) Median = 51

	n=	Locus of Control Scores < Median	Locus of Control Scores > Median
Acceptance of PLMV	4	3.0	1.0
Nonacceptance of PLMV	3	.5	2.5

$\chi^2 = 2.32$        $df = 1$        $p > .10$

Table 3. Bivariate Grids for Total, Male-Only, and Female-Only Populations for Chi-square analysis. (Critical values from D. Freedman, R. Pisani, and R. Purves. *Statistics*. New York: W. W. Norton & Co., 1978), p. A-72.

The value for  $\chi^2$  for the Total Population was found to be 10.72 ( $df=1$ ), which is significant at greater than the .01 level. The Male-Only population sub-group also showed a significant  $\chi^2$  value ( $\chi^2=5.76$ ,  $df=1$ ,  $p < .02$ ).

However, the results for women were not statistically significant by the Chi-square analysis ( $\chi^2=2.32$ ,  $df=1$ ,  $p > .10$ ).

## CHAPTER V

DISCUSSION

The results of the preceding analysis suggest that there is a significant association between locus of control orientation and the expressed choice to accept or not accept the use of a portable long-term mechanical ventilator.

Positive association was found between internal orientation of locus of control and the expressed choice to use a PLMV; externals were less likely to accept a portable long-term mechanical ventilator. These findings were significant beyond the .01 level. Significant results ( $p .02$ ) were also found when only males were considered. In the female-only group the effects were in the same direction, though they were not statistically significant. The small sample size in the female-only group ( $n=7$ ) may have reduced the likelihood of obtaining significant results.

The acceptance of PLMV by internally oriented subjects was consistent with earlier views that these individuals have a greater need to be independent (Odell, 1959), are more confident in their own abilities (Crown & Liverant, 1963), and demand an active and participatory role in effecting what happens to them (Wenerowicz, Risking & Jenkins, 1978).

The non-acceptance of a PLMV, associated with externality, was found congruous with the previously reported observations of passivity in the face of frustrating situations (Strickland, 1965), and a diminished willingness to risk failure (Platt & Eisenman, 1968).

The mean score of the sample in this study is in the external range (males=46.41; females=48.57). This finding supports earlier findings for disabled groups (Lefcourt, 1976). It has been described that prolonged hospitalization

(Shybut, 1969), immobility and altered body image (Cromwell, Rosenthal, Shakow & Cahn, 1961), as well as major personal adversity causes a shift in perception of control toward externality. Therefore it was of interest that these values were only slightly greater than the highest possible internal value (45) in view of the marked physical limitation of this sample group.

While physical limitations have an externalizing effect, Lipp and his coworkers (1969) found an association between successful adaptation to disability and a more internal perception of control. By mitigating the level of immobility, the use of a PLMV may have facilitated the reorientation of control perception toward internality.

Those accepting the PLMV were significantly different in their orientation scores than those who refused the use of a PLMV. However, the pre-dominance of externally oriented individuals in the group with future acceptance suggests that other factors might affect the control perception of the individual. One modifying factor suggested by observation is that the group without a portable device has less control over their environment currently than those who are using the machines now. This low degree of control is reflected in their externally oriented scores.

It was not possible, based on the information obtained from this study, to discover whether the orientation toward internality in those who are currently using a PLMV preceded or succeeded their utilizing these machines. The finding that all non-accepting subjects are external tended to support the original hypothesis, that orientation predisposes individuals to specific choice behaviors. To provide a definitive answer, further studies are needed. There

is strong indication that the internal-external locus of control score may be an important variable in predicting patient acceptance of a PLMV or a similar life-support device. It does not however, tap other important variables, such as motivation, perception of gain, and real or perceived ability, which may have a decisive effect on choice behavior as well. Nevertheless, the strength of association between locus of control and acceptance of a PLMV suggests that there may be a practical application for using this instrument in assessing the potential acceptance of a new or modified biomedical device within a given population.

A retesting of those persons who accepted the PLMV for future use, after they commenced to use the machine, would contribute to the clarification of some of the questions raised by this study.

The findings of the present study are important in that a group of individuals, immured for decades and dependent on mechanical assistance to breathe, were found to have scores on the James Scale that are within the normal range. This favorable comparison with findings in other samples permits a degree of generalizability of results, despite the apparent uniqueness of this group.

Societal concerns over the allocation of funds and ethical considerations of choice behavior related to the use of mechanical life-support devices encourage further studies of the association of locus of control and status of acceptance of a PLMV. The content and timing of the training period, in preparation to the use of a PLMV, and the availability of support systems during the period of adaptation are some of the factors that could become more individualized in the light of this knowledge.



If understanding could be gained of apparently paradoxical reactions to socially desirable alternatives (such as the rejection of a life-support device), those in the position to plan and care for the consumer of such devices could become more useful in selecting, advising, and assisting these individuals.

## BIBLIOGRAPHY

- Alcock, A.J.W., Hildes, J.A., Kaufert, P.A., Kaufert, J.M., and Bickford, J. The physical and social consequences and rehabilitation of respiratory polio in Manitoba. Transcript of presentation at Rehabilitation International Congress, Winnipeg, Canada, 1980.
- Alger, B., and Rusk, H. The rejection of help by some disabled people. Archives of Physical and Medical Rehabilitation, 1955, 36, 279-281.
- Ansbacher, H., and Ansbacher, R. The individual psychology of Alfred Adler. New York: Basic Books, 1956.
- Baldursson, H. and Brattstrom, H. Sexual difficulties and total hip replacement in rheumatoid arthritis. Scandinavian Journal of Rheumatology, 1979, 8 (4), 214-216.
- Barker, E.K. The role of the extended family in urban social networks. New York: Doubleday and Co., 1961.
- Baron, R.M., Cowan, G., Ganz, R.L., and MacDonald, M. Interaction of locus of control and type of performance feedback: Considerations of external validity. Journal of Personality and Social Psychology, 1974, 30, 285-292.
- Barns, R.H. Psychological problems in physical rehabilitation: A review. American Journal of Medical Sciences, 1952, 223, 106-112.
- Barton, K. and Cattell, R. Personality before and after chronic illness. Journal of Clinical Psychology, 1972, 28, 464-467.
- Bender, L. Psychoses associated with somatic diseases that distort the body structure. Archives of Neurological Psychiatry, 1931, 32, 1000-1029.
- Butterfield, E.C. Locus of control, test anxiety, reaction to frustration and achievement attitudes. Journal of Personality, 1961, 32, 298-311.
- Carnevali, D. and Brueckner, S. Immobilization: Assessment of a concept. American Journal of Nursing, 1970, 70 (7), 1502-1507.

- Clouser, R.A., and Hyelle, L.A. Relationship between locus of control and dogmatism. Psychological Reports, 1970, 26, 1006.
- Cromwell, R.L., Rosenthal, D., Shakow, D., and Zahn, T.P. Reaction time, locus of control, choice behavior and descriptions of parental behavior in schizophrenic and normal subjects. Journal of Personality, 1961, 29, 363-380.
- Crowne, D.P., and Liverant, S. Conformity under varying conditions of personal commitment. Journal of Abnormal and Social Psychology, 1963, 66, 547-555.
- Dawes, L.G. Observations on poliomyelitis patients in respirators. In R. Loewenstein (Ed). Drives, Affects, Behavior. New York: International University Press, 1953.
- Dean, D.G. Dynamic social psychology: Toward appreciation and replication. New York: Random House, 1969.
- Desmarais, M.H., Alcock, A.J., and Hildes, J.A. Home program for respirator patients. Canadian Medical Association Journal, 1956, 75, 8.
- Dobson, K. A second chance. The Canadian Nurse, 1980, 76(6), 37-39.
- Dweck, C.S. The role expectations and attribution on the alleviation of learned helplessness. Journal of Personality and Social Psychology, 1975, 31, 674-685.
- Efran, J. Some personality determinants of memory for success and failure. Unpublished doctoral dissertation, Ohio State University, 1963.
- Feather, N.T. Some personality correlates of external control. Australian Journal of Psychology, 1967, 19, 253-260.
- Finlayson, M.A., and Rourke, B.P. Locus of control as a prediction variable in rehabilitation medicine. Journal of Clinical Psychology, 1978, 34(2), 367-368.
- Freedman, D., Pisani, R., and Purves, R. Statistics. New York: W.W. Norton & Co., 1978.

- Garrett, J.F. The vocational adjustment of the polio adolescent. Journal of Psychosomatic Medicine, 1958, 18, 64-49.
- Gaylin, W., Glasser, I., Marcus, S., and Rothman, D. Doing Good: The limits of benevolence. New York: Pantheon Books, 1978.
- Glass, D.C., Singer, J.E., Leonard, H.S., Kranz, D., Cohen, S., and Cummings, H. Perceived control of aversive stimulation and the reduction of stress responses. Journal of Personality, 1973, 41, 577-595.
- Glud, E., and Blane, H.T. Body-image changes in patients with respiratory poliomyelitis. Journal of Psychosomatic Medicine, 1958, 18, 24-39.
- Gorman, B.S. A multivariate study of relationship of cognitive control and cognitive principles to reported mood experiences. Unpublished doctoral dissertation. City University of New York, 1971.
- Golin, S. The effects of stress on the performance of normal and high anxious subjects under chance and skill conditions. Journal of Abnormal Psychology, 1974, 83, 466-472.
- Goss, A., and Morosko, T.E. Relation between a dimension of internal-external control and the MMPI with alcoholic population. Journal of Consulting and Clinical Psychology, 1970, 34, 189-192.
- Gotali, J., and Bialer, I. Children's locus of control scale: Independence from response set bias among retardates. American Journal of Mental Deficiency, 1968, 72, 622-625.
- Graves, T.D. Psychological acculturation in a tri-ethnic community. Southwestern Journal of Anthropology, 1967, 23, 337-350.
- Greyson, M. Psychiatric aspects of rehabilitation and mobility. Vocational Rehabilitation - Rehabilitation Service Series, No. 314. 1962, 20-32.
- Hersch, P.D., and Scheibe, K.E. On the reliability and validity of internal-external control as a personality dimension. Journal of Consulting Psychology, 1967, 31, 609-614.

- Hiroto, D.S. Locus of control and learned helplessness in man. Journal of Personality and Social Psychology, 1975, 31, 311-327.
- Holden, K.B. Attitude toward external versus internal control of reinforcement and learning of reinforcement sequences. Unpublished Master's thesis, Ohio State University, 1958.
- Holden, M.O. The effect of chronic hemodialysis on dependency. Dialysis/Transplant, 1978, 7(6), 644-647; 649.
- Houtras, P.T., and Scharf, M.C. Manifest anxiety and locus of control of low-achieving college males. Journal of Psychology, 1970, 74, 95-100.
- James, W.,H. The application of social learning theory to educational process. Paper presented to the Society for Research in Child Development, Minneapolis, 1965.
- James, W.H., and Rotter, J.B. Partial and 100 percent reinforcement under chance and skill conditions. Journal of Experimental Psychology, 1958, 55, 397-403.
- James, W.H., Woodruff, A.B., and Werner, W. Effect of internal and external control upon changes in smoking behavior. Journal of Consulting Psychology, 1965, 29, 184-186.
- Joe, V.C. Social desirability and the I-E Scale. Psychological Reports, 1972, 30, 44-46.
- Joe, V.C. A review of the internal-external control construct as a personality variable. Psychological Reports, 1971, 28, 619-640.
- Jonsen, A.R. The totally implantable artificial heart. The Hasting Center Report, 1973, 3(5), 126.
- Julian, J.W., and Katz, S.B. Internal versus external control and the value of reinforcement. Journal of Personality and Social Psychology, 1968, 76, 43-48.
- Karabenick, S.A. Valence of success and failure as a function of achievement motives and locus of control. Journal of Personality and Social Psychology, 1972, 21, 101-110.

- Kirscht, J.P. Perception of control and health beliefs. Canadian Journal of Behavioral Science, 1972, 4, 225-237.
- Landnauer, K.S. A national program of respiratory and rehabilitation centers. Poliomyelitis: Papers presented at the 4th International Conference. Philadelphia: J.B. Lippincott Co., 1958.
- Lefcourt, H.M. Internal versus external locus of control of reinforcement: A review. Psychological Bulletin, 1966, 65, 206-220.
- Lefcourt, H.M. Locus of control: Current trends in theory and research. Hillsdale, New Jersey: Lawrence Erlbaum Assoc., Publishers, 1976.
- Lefcourt, H.M., Gronnerud, P., and MacDonald, P. Cognitive activity and hypothesis formation during double entendre work association tests as a function of locus of control and field dependence. Canadian Journal of Behavioral Science, 1973, 5, 161-173.
- Lipp, L., Kolstoe, R., James, W., and Randall, H. Denial of disability and internal control of reinforcement: A study using a perceptual defense paradigm. Journal of Consulting and Clinical Psychology, 1968, 32, 72-75.
- Liverant, S., and Scodell, A. Internal and external control as determinants of decision making under conditions of risk. Psychological Reports, 1960, 7, 59-67.
- Lohman, R., Voges, B., Meuter, F., Rath, K.V., Thomas, W. Psychopathology and Psychotherapy in chronically ill patients. Psychotherapy and Psychosomatic Medicine, 1979, 31 (1-4), 267-276.
- MacDonald, A.P., Jr. Internal-external locus of control and the practice of birth control. Psychological Reports, 1970, 27, 206.
- MacDonald, A.P., and Hall, J. Perception of disability by the disabled. Journal of Consulting and Clinical Psychology, 1969, 33, 654-660.
- Malcolm, R., Robson, J.R., Vanderveen, T.W., and O'Neil, P.M. Psychosocial aspects of total parenteral nutrition. Psychosomatics, 1980, 21 (2), 115-125.

- McNair, D.M., Lorr, M., and Droppleman, L. The profile of mood states. Educational and Industrial Testing Service. San Diego, 1971.
- Messer, S.B. The relation of internal-external control to academic performance. Child Development, 1972, 43, 1456-1462.
- Mosteller, F., and Tukey, J. Data Analysis and Regression. Menlo Park, California: Addison-Wesley Publishing, 1977.
- Mowrer, O.H., and Viek, P. An experimental analogue of fear from a sense of helplessness. Journal of Abnormal and Social Psychology, 1948, 43, 193-200.
- Odell, M. Personality correlates of independence and conformity. Unpublished Master's thesis. Ohio State University, 1959.
- Phares, E.J. Internal-external control as a determinant of amount of social influence exerted. Journal of Personality and Social Psychology, 1965, 2, 642-647.
- Phares, E.J., Ritchie, D.E., and Davis, W.L. Internal-external control and reaction to threat. Journal of Personality and Social Psychology, 1968, 10, 402-405.
- Pines, H.A. An attributional analysis of locus of control orientation and surces of informational dependence. Buffalo: State University of New York Prss, 1974.
- Pines, H.A., and Julian, J.W. Effects of task and social demands on locus of control differences in information processing. Journal of Personality, 1972, 40, 407-416.
- Platt, J.J., and Eisenman, R. Internal-external control of reinforcement, time perspective, adjustment, and anxiety. Journal of General Psychology, 1968, 79, 121-128.
- Price, H., Obel, I.W. and Millar, R.N. Psychosocial aspects of cardiac pacing. South African Medical Journal, 1980, 57(15), 580-582.
- Prugh, D.G. and Taguiri, C.K. Emotional aspects of the respirator care of patients with poliomyelitis. Psychosomatic Medicine, 1954, 16, 104-128.

- Richter, C.P. The phenomenon of unexplained sudden death in animals and man. In H. Feifel (Ed.). The Meaning of Death. New York: McGraw-Hill, 1959.
- Robinson, H.A., and Finesinger, J.E. A framework for the psychopathology of poliomyelitis. Journal of Psychosomatic Medicine, 1958, 18, 10-17.
- Roessler, R., and Bolton, B. Psychosocial adjustment to disability. Baltimore: University Park Press, 1978.
- Rotter, J.B. Some problems and misconceptions related to the construct of internal versus external control of reinforcement. Journal of Consulting and Clinical Psychology, 1975, 48, 56-67.
- Rotter, J.B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80(1, whole No. 609).
- Rotter, J.B., Seeman, M. and Liverant, S. Internal-external control of reinforcement: A major variable in behavior theory. In N. Washburn (Ed.). Decisions, values and groups (Vol. 2). London: Pergamon Press, 1962, 473-516.
- Safilios-Rothschild, C. The sociology and social psychology of disability and rehabilitation. New York: Random House, 1970.
- Seeman, M. Alienation and social learning in a reformatory. American Journal of Sociology, 1963, 69, 270-284.
- Seeman, M. On the meaning of alienation. American Sociological Review, 1959, 24, 782-791.
- Seeman, M., and Evans, J.W. Alienation and learning in a hospital setting. American Sociological Review, 1962, 27, 772-783.
- Sherman, S. Internal-external control and its relationship to attitude change under different social influence techniques. Journal of Personality and Social Psychology, 1973, 23, 23-29.
- Simmons, W.L. Psychological correlates of the James-Phares Scale. Unpublished Master's thesis, Ohio State University, 1959.



- Sordoni, C. Personality and situational determinants of humor appreciation and humor production. Unpublished doctoral dissertation, University of Waterloo, 1975.
- Shybut, J. Time perspective, internal versus external control, and severity of psychological disturbance. Journal of Clinical Psychology, 1968, 24, 312-315.
- Tabori, J. Behavioral changes during acute respiratory failure. Journal of the Medical Society of New Jersey, 1977, 44, 256-259.
- Tolor, A., and Reznikoff, M. Relation between insight, repression-sensitization, internal-external control and death anxiety. Journal of Abnormal Psychology, 1967, 72, 426-430.
- Walson, K.A., Maides, S., and Wallson, B.S. Health related information seeking as a function of health-related locus of control and health value. Journal of Research in Personality, 1976, 10, 215-222.
- Wendland, L.V. Employment prognosis of the post-poliomyelitic. Journal of Applied Psychology, 1952, 36(5), 328-332.
- Wenerowicz, W.J., Riskind, J.H., and Jenkins, P.G. Locus of control and degree of compliance in hemodialysis patients. Journal of Dialysis, 1978, 2(5&6), 495-505.
- White, R.W. Motivation reconsidered: A concept of competence. Psychological Review, 1959, 66, 297-333.
- William, C.B., and Vantress, F.E. Relation between internal-external control and aggression. Journal of Psychology, 1969, 71, 59-61.
- Wright, B.A. Physical disability - A psychological approach. Toronto: Harper & Row Publishers, 1960.

## APPENDIX A

## UNIVERSITY OF CALIFORNIA AT SAN FRANCISCO

## CONSENT TO BE A RESEARCH SUBJECT

- A. Maria Larsen, a registered nurse and a graduate student at the Department Biological Dysfunction, School of Nursing, University of California at San Francisco, is studying the attitudes and feelings of people who have been using mechanical breathing aids over long periods of time.
- B. If I agree to participate in this study, I will be asked to indicate my point of view on statements listed in a questionnaire. The statements are on general topics, collected from many groups and represent a variety of opinions. There are no right or wrong answers. The only personal information asked of me will be my age, whether I am male or female, and some information about my use of mechanical breathing aids.
- C. I can expect to spend 30-50 minutes to complete the form. If I request assistance with recording of my answers, someone will be available to do so. Privacy will be provided for me to complete the questionnaire.
- D. I have been assured that every precaution will be taken so my answers will remain anonymous. My answers will be used by the researcher for the purpose of this study exclusively and only group results will be reported. Only the investigator will have access to my name and when the test forms have been coded for subject number, the name list will be destroyed.
- E. I realize that there will be no direct benefit to me from this study, but that the information collected might help planning for others who need life support machines. If I wish, I will be sent a copy of the results when the study is completed.
- F. I have talked with Ms. Larsen about this study and my questions have been answered. Should I have any further questions about this study, I may call her at 247-6933.
- G. My participation in this study is voluntary. I may decline or change my mind at any time, without penalty or ill affect on my status as a resident here. I have been given a copy of this consent form, as well as the Experimental Subject's Bill of Rights, to keep.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Witness: \_\_\_\_\_

## APPENDIX B

INSTRUCTIONS

This questionnaire has two parts. First, Section A, asks some questions about you. There might be more than one answer to some of the questions on the first page. Please circle all those that apply to you.

SECTION A

1. On my last birthday, I was:
  - 20-29 years old
  - 30-39 years old
  - 40-49 years old
  - 50-59 years old
  - 60-69 years old
  - 70-79 years old
  
2. I am a:
  - Male
  - Female
  
3. I use the following mechanical breathing aid(s) now for a part of each day:  
(May be more than one choice)
  - Cuirrass
  - IPPB (Intermittent Positive Pressure Breathing)
  - Iron Lung
  - Mini-Lung
  - Rocking Bed
  
4. I plan to use the following mechanical breathing aid(s) in the foreseeable future:  
(May be more than one choice)
  - Cuirrass
  - IPPB
  - Iron Lung
  - Mini-Lung
  - Rocking Bed

THE JAMES SCALE OF INTERNAL-EXTERNAL LOCUS OF CONTROL

This part contains a number of statements about various topics. They have been collected from different groups of people and represent a variety of opinions. There are no right or wrong answers to this part of the questionnaire. For every statement there are large numbers of people who agree or disagree.

Please read each item carefully and be sure that you indicate the one response which most closely corresponds to the way which you personally feel.

	<u>STRONGLY AGREE</u>	<u>AGREE</u>	<u>DISAGREE</u>	<u>STRONGLY DISAGREE</u>
1. I like to read newspaper editorials whether I agree with them or not.	SA	A	D	SD
2. Wars between countries seem inevitable despite efforts to prevent them.	SA	A	D	SD
3. I believe the government should encourage more young people to make science a career.	SA	A	D	SD
4. It is usually true of successful people that their good breaks far outweighed their bad breaks.	SA	A	D	SD
5. I believe that moderation in all things is the key to happiness.	SA	A	D	SD
6. Many times I feel that we might just as well make many of our decisions by flipping a coin.	SA	A	D	SD
7. I disapprove of girls who smoke cigarettes in public places.	SA	A	D	SD

	<u>STRONGLY AGREE</u>	<u>AGREE</u>	<u>DISAGREE</u>	<u>STRONGLY DISAGREE</u>
8. The actions of other people toward me many times have me baffled.	SA	A	D	SD
9. I believe it is more important for a person to like his work than to make money at it.	SA	A	D	SD
10. Getting a good job seems to be largely a matter of being lucky enough to be in the right place at the right time.	SA	A	D	SD
11. It's not what you know but who you know that really counts in getting ahead.	SA	A	D	SD
12. A great deal that happens to me is probably just a matter of chance.	SA	A	D	SD
13. I think that people spend too much time watching television these days.	SA	A	D	SD
14. I feel that I have little influence over the way people behave.	SA	A	D	SD
15. It is difficult for me to keep well-informed about foreign affairs.	SA	A	D	SD
16. Much of the time the future seems uncertain to me.	SA	A	D	SD

	<u>STRONGLY AGREE</u>	<u>AGREE</u>	<u>DISAGREE</u>	<u>STRONGLY DISAGREE</u>
17. I think the world is much more unsettled now than it was in our grandfathers' time.	SA	A	D	SD
18. Some people seem born to fail while others seem born for success no matter what they do.	SA	A	D	SD
19. I believe there should be less emphasis on spectator sports and more on athletic participation.	SA	A	D	SD
20. It is difficult for ordinary people to have much control over what politicians do in office.	SA	A	D	SD
21. I tend to daydream more than I should.	SA	A	D	SD
22. I feel that many people could be described as victims of circumstances beyond their control.	SA	A	D	SD
23. Movies do not seem as good as they used to be.	SA	A	D	SD
24. It seems many times that the grades one gets in school are more dependent on the teachers' whims than on what the student can really do.	SA	A	D	SD
25. Money shouldn't be a person's main consideration in choosing a job.	SA	A	D	SD

	<u>STRONGLY AGREE</u>	<u>AGREE</u>	<u>DISAGREE</u>	<u>STRONGLY DISAGREE</u>
26. It isn't wise to plan too far ahead because most things turn out to be a matter of good or bad fortune anyhow.	SA	A	D	SD
27. At one time I wanted to become a newspaper reporter.	SA	A	D	SD
28. I can't understand how it is possible to predict other people's behavior.	SA	A	D	SD
29. I enjoy smoking cigarettes and will continue to be a smoker.	SA	A	D	SD
30. When things are going well for me I consider it due to a run of good luck.	SA	A	D	SD
31. I believe the federal government has been taking over too many of the affairs of private management.	SA	A	D	SD
32. There's not much use in trying to predict which questions a teacher is going to ask on an examination.	SA	A	D	SD
33. I get more ideas from talking about things than reading about them.	SA	A	D	SD
34. Most people don't realize the extent to which their lives are controlled by accidental happenings.	SA	A	D	SD

	<u>STRONGLY AGREE</u>	<u>AGREE</u>	<u>DISAGREE</u>	<u>STRONGLY DISAGREE</u>
35. At one time I wanted to be an actor (or actress).	SA	A	D	SD
36. I have usually found that what is going to happen will happen, regardless of my actions.	SA	A	D	SD
37. Life in a small town offers more real satisfactions than life in a large city.	SA	A	D	SD
38. Most of the disappointing things in my life have contained a large element of chance.	SA	A	D	SD
39. I would rather be a successful teacher than a successful businessman.	SA	A	D	SD
40. I don't believe that a person can really be a master of his fate.	SA	A	D	SD
41. I find mathematics easier to study than literature.	SA	A	D	SD
42. Success is mostly a matter of getting good breaks.	SA	A	D	SD
43. I think it is more important to be respected by people than to be liked by them.	SA	A	D	SD
44. Events in the world seem to be beyond the control of most people.	SA	A	D	SD



	<u>STRONGLY AGREE</u>	<u>AGREE</u>	<u>DISAGREE</u>	<u>STRONGLY DISAGREE</u>
45. I think our country should take a more active role in world affairs.	SA	A	D	SD
46. I feel that most people can't really be held responsible for themselves since no one has much choice about where he was born or raised.	SA	A	D	SD
47. I like to figure out problems and puzzles that other people have trouble with.	SA	A	D	SD
48. Many times the reactions of people seem haphazard to me.	SA	A	D	SD
49. I rarely lose when playing card games.	SA	A	D	SD
50. There's not much use in worrying about things — what will be, will be.	SA	A	D	SD
51. I think that everyone should belong to some kind of church.	SA	A	D	SD
52. Success in dealing with people seems to be more a matter of the other person's moods and feelings at the time rather than one's own actions.	SA	A	D	SD
53. One should not place too much faith in newspaper reports.	SA	A	D	SD

	<u>STRONGLY AGREE</u>	<u>AGREE</u>	<u>DISAGREE</u>	<u>STRONGLY DISAGREE</u>
54. I think that life is mostly a gamble.	SA	A	D	SD
55. I am very stubborn when my mind is made up about something.	SA	A	D	SD
56. Many times I feel that I have little influence over the things that happen to me.	SA	A	D	SD
57. I like popular music better than classical music.	SA	A	D	SD
58. Sometimes I feel that I don't have enough control over the direction my life is taking.	SA	A	D	SD
59. I sometimes work at difficult things too long even when I know they are hopeless.	SA	A	D	SD
60. Life is too full of uncertainties.	SA	A	D	SD

Please list any qualifying statements or other comments concerning this survey in the space that follows if you so wish.

