EVALUATION OF A RESIDENTIAL ENVIRONMENT FOR THE SEVERELY PHYSICALLY DISABLED

A Dissertation

Presented to

the Faculty of the Department of Psychology

University of Houston

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

By

Judith A. Kirksey

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ABSTRACT

Through the use of daily diary records, kept by subjects themselves, this study investigated the relation between residential setting and daily life activities of spinal cord injured young adults. The study was especially directed toward evaluation of the effects of a particular residential setting, one specifically designed to have a positive impact on the functioning of the severely physically disabled young adult, in comparison with the other two available living alternatives, home and nursing home.

Residents of the special setting, a residence established by the Texas Institute for Rehabilitation and Research (TIRR), were matched with other disabled individuals on the following criteria: age, marital status, sex, race, educational level, level of disability, and age at onset. TIRR residents who had previously lived in nursing homes were matched with disabled individuals living in nursing homes; those who had lived at home were matched with disabled individuals living at home. A non-disabled control group was included as well, in order to provide a "norm," a base rate estimate for the comparison of the two disabled groups. Subjects in the non-disabled group were also matched with the TIRR residents on age, marital status, sex, race, and educational level.

Subjects in all three groups (TIRR residence, home-nursing home, and non-disabled) kept daily records of their activities, interpersonal contacts, and settings or locations entered over a period of one week. From the diaries, 15 dependent variables were derived: (1) number of activities engaged in during the week, (2) number of varieties of activities, (3) number of activities performed with others, (4) number of activities performed alone, (5) number of persons interacted with, without regard to

repetition of particular persons, (6) number of different persons interacted with, (8) number of persons interacted with other than family or attendant, (9) number of entrances into settings, (10) number of different settings entered, (11) number of types of settings entered, (12) number of entrances into settings outside residence, (13) number of vocational-educational activities, (14) number of social-recreational activities, (15) number of business-commercial activities.

Comparisons were made to determine significant differences among the three groups, and the extent of similarity among groups was estimated through analysis of overlap of the group distributions. The two disabled groups were found to be significantly different on two variables, the TIRR group having interacted with more persons other than family members or attendants and with more different persons. The non-disabled group exceeded both disabled groups on all variables related to settings, on number of vocational-educational activities, and number of social-recreational activities. The non-disabled group also exceeded the home-nursing home group in varieties of activities, and exceeded the TIRR group in number of activities performed alone. The two disabled groups varied considerably in the extent of similarity to the non-disabled group. The results were discussed in two contexts: in terms of how well the TIRR residence fulfilled its goals and how closely it approximated the norm in comparison with other residential alternatives.

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INTRODUCTION

The onset of severe physical disability, in particular that which results from spinal cord injury, alters the individual's usual patterns of living, employment, and socialization. The task of the rehabilitation process is to restore and/or replace as many of these patterns as possible. In severe physical disability, however, some patterns can never be replaced. The individual thus enters into a new relationship with his environment, and where he lives becomes important in a new way in relation to how he lives. The question of the impact of the residential environment on individual functioning becomes particularly salient when considering whether the rehabilitation process has been augmented or retarded after discharge from a rehabilitation program. The purpose of this study is to obtain a descriptive picture of post-discharge daily life of young spinal cord injured adults; to investigate relationships between residential setting and variation in their daily activities, their interpersonal contacts, and the behavior settings they enter; and to evaluate a particular residential setting program which was specifically designed to have a positive impact on their functioning.

CHAPTER II

REVIEW OF THE LITERATURE

Over the past 20 years the definition of "rehabilitation" has been expanded to mean "total" adaptation of the disabled person, including physical, psychological, social, vocational, and recreational aspects of an individual's functioning (Straus, 1963). With this broadening of definition, the goals and responsibilities of rehabilitation agencies and institutions have been widened. Thus, even though a particular institution may deal only with those who have a particular physical handicap, the effective rehabilitation of those persons involves not only maximizing physical functioning within the limitations imposed by the disability, but also facilitating "total" adjustment. In this paper, the rehabilitation process will be considered only in regard to severely physically disabled adults, specifically, spinal cord injured young adults who have been classified as paraplegic or quadriplegic and who are non-ambulatory.

Each year, approximately 4,000 to 5,000 persons in the United States become paraplegic or quadriplegic (Freed, 1967). Automobile and sporting accidents, along with gunshot wounds, are the most frequent causes of disability (O'Connor & Leitner, 1971). Once the spinal cord is severed or severely damaged, nerve control of the body, both sensory and motor, is lost below that point. Thus functional level is related to the level and severity of injury to the cord. In paraplegia, the effect of injury is low enough on the spinal cord so that the individual retains functioning in the arms, while in quadriplegia the arms are affected as well as the legs. Fifteen years ago, those with high spinal cord injuries could not

survive long past the immediate time of injury; there were too many complications that the medical profession was not equipped to handle (Maxwell, 1971).

The amoung of physical impairment, depending on functional level of the spinal cord, is variable within the two classifications of quadriplegia and paraplegia. According to Freed (1965), in quadriplegia lesions at the first three cervical vertebral levels are usually rapidly fatal because of total respiratory paralysis. In recent years, however, some individuals have survived with the aid of mechanical breathing devices. Lesions at the fourth cervical level (C-4) allow limited neck motion but also have some respiratory function impairment. At C-5 there is good neck motion, partial shoulder movement, and perhaps weak elbow flexion, and respiratory function is further increased. Lesions at C-6 permit full innervation of shoulder motion, elbow flexion, weak wrist extension, and some grasp, while lesions at C-7 permit the additional function of elbow extension and limited finger extension. In paraplegia as well, function continues to increase as the level of lesion becomes lower. Thus individuals with lesions at the third thoracic level (T-3) would be non-ambulatory, while those with lesions at T-10, again depending on the completeness of the lesions, can often be fitted with braces which permit functional walking (Rusk, 1971).

Besides the paralyses of two or four extremities, the spinal cord injured are faced with other physical difficulties which must be relearned or brought under medical or other external control: loss of control of bowel and bladder functions, loss of sensation and sometimes reflex in sexual functioning, irregularity in blood pressure, spasticity

(increase in the stretch reflex), contractures (shortening of muscles, tendons, and ligaments), pulmonary complications (in quadriplegics with diminished cough or lung function), phantom pain, decubiti (pressure sores), and the formation of renal calculi and renal complications (O'Connor & Leitner, 1971; Rusk, 1971). With adequate physical rehabilitation and medical care, most of these difficulties can be dealt with satisfactorily. The major cause of death in paraplegics is, however, renal failure secondary to urinary tract infection, while for quadriplegics, pulmonary failure has replaced renal failure as a major cause of death (Savino, Belcheck, & Brean, 1971). Constant vigilance and effort on the part of the individual and those around him are necessary to counteract all of the debilitating complications listed above.

Adjustment to and dealing with the physical limits and difficulties of paraplegia or quadriplegia are further complicated by the social and emotional situation of the severely disabled individual. According to Littman (1964), the "body whole" and the "body beautiful" are of high social value in our society. As a result, the disabled person may be regarded by himself and others as inferior. Wright (1960) has written extensively about the social-psychological position of the physically disabled. While Wright gives careful consideration to the problem of devaluation by self and others, she also points out that while occupying an inferior status position, the physically disabled person may also occupy a salutary status position as well. That is, although the severely physically disabled may be objects of pity and condescension, they may also simultaneously be admired and respected for having faced great difficulties in their lives. As a result of these conflicting and co-existing

attitudes, the severely physically disabled individual is frequently confronted with very ambiguous social situations. Often before entering a particular social situation, he does not know what sort of attitudes he will be confronted with, and once he does know, he frequently may find it difficult to tell if the attitudes of others are based on circumstantial or personality reasons or are related to his physical disability.

Goffman (1963) has also discussed the ambiguity of the physically disabled person's social situation. In Goffman's analysis, the physically disabled are "stigmatized" in the sense that they possess an "undesired differentness" from what society expects. For the physically disabled, then, social situations "can make for anxious unanchored interaction." Furthermore, the situation is complicated by the ambiguity which the non-disabled person also experiences in these interactions:

> ...it is to be suspected that we normals will find these situations shaky too. We will feel that the stigmatized individual... [may] read unintended meanings into our actions. We ourselves may feel that if we show direct sympathetic concern for his condition, we may be overstepping ourselves; and yet if we actually forget that he has a failing we are likely to make impossible demands of him....Each potential source of discomfort for him can become something we sense he is aware of, aware that we are aware of, and even aware of our state of awareness about his awareness; the stage is then set for the infinite regress of mutual consideration that Meadian social psychology tells us how to begin but not how to terminate (Goffman, 1963, p. 18).

Goffman continues that the stigmatized person is more likely to become adept at managing these situations than is the non-stigmatized person, since they occur more often in the stigmatized person's life.

Behavioral-emotional responses on the part of the severely physically disabled to their disability have been described and categorized by various authors (Dembo, Leviton, & Wright, 1956; Masterman, 1961; Nagler, 1950;

Shontz, 1962; Siller, 1969; Wright, 1960). The responses are variable across and within individuals, there are no "typical" reactions or personality characteristics of persons with spinal cord dysfunction which differentiate them from other groups. Most authors do agree, however, that severely physically disabled individuals experience a profound sense of loss at the onset of disability, and while the ways in which different individuals deal with this feeling may vary, a re-evaluation of goals and re-organization of values are usually necessary responses if the person is to deal effectively with the fact that some areas of life are and will be closed to him.

Thus far we have described some of the physical, social, and psychological aspects of spinal cord injury. In the rehabilitation process, all of these aspects have come to be considered important factors and have been included as appropriate areas of concern. Comprehensive rehabilitation centers have been developed in an effort to live up to this expanded definition of rehabilitation. In such centers, services have been integrated and designed to meet the needs of the "whole" patient (Wessen, 1963). These centers have combined some of the characteristics of hospitals, schools, and industry, offering medical treatment and physical restoration, education in self-care and managing activities of daily living, and vocational training and guidance. According to Hirschberg, Lewis, and Thomas (1964), the primary goal of such centers is for the patient to reach the point of "optimal discharge:"

> Optimal discharge is achieved when the rehabilitee assumes that place in his environment in which his potentialities have the maximum opportunity for satisfactory expression. This implies that the individual has achieved maximal functional restoration...is either discharged to his home in a family setting and restored to economic capability at an appropriate job or

> has found a place in a setting in which he has maximum opportunity within his capabilities for social relationships with family or friends, use of his economic resources, and expression of his vocational or avocational interests (p. 81).

The goal of "optimal discharge" is often not met. After completing a comprehensive rehabilitation program the individual often cannot be released at that point because of limited family or community resources. Since space in these centers is in demand, some individuals may be released to inappropriate living environments because there are no other alternatives.

Family resources, both economic and psychological, are very important in the post-discharge welfare of the spinal cord injured person (Roth & Eddy, 1967; Steinberg, Berenbaum, & Stoddard, 1968). Frequently the physical limits imposed by the disability make it necessary for someone to assist the individual in certain basic activities (e.g., dressing; bathing; bowel and bladder care; transferring in and out of bed, wheelchair, or car). Follow-up surveys of spinal cord injured individuals have shown that a substantial percentage of this group (more than 60%) are dependent on others after discharge for some portion of their daily care needs (Runge, 1966; Stock, 1971). Time for and ability to carry out assistance in daily care needs are thus important resources which must be available in the family; otherwise, there must be sufficient financial resources to pay for these services. Financial responsibilities are further increased by the added costs of equipment and supplies. Long-term disability usually imposes economic hardship (Littman, 1964; Munro, 1966). The family's financial resources and insurance benefits have usually been exhausted during the acute phase of illness or injury (National Commission on Community Health Service, 1966). Thus, only the more affluent families are able to maintain the spinal cord injured member without public assistance.

Psychological resources are equally important. Dependence on others, even if for limited physical assistance, is difficult for both the spinal cord injured adult and the other family members. The tensions and stress this situation may induce can require more psychological resources than the family or the disabled member possess. Shontz (1962) found that a substantial number of the severely physically disabled preferred to remain in institutions because "they feel themselves to be less burdensome there than they would be at home." Maxwell (1971) also describes the stresses physical dependence may impose:

> Usually the family is able to handle these problems for a young child with little difficulty. However, as the disabled person reaches adulthood, or if the disability occurs later in life, then these tasks become very taxing. Moreover, the disabled person recognizes and responds to the physical, emotional, and financial burden he is imposing on them (p. 11).

Spinal cord injury in a family member disrupts the usual successive phases in the family developmental history, the bounds of these phases being "set in the first place by the limits of the human constitution, and in the second by the social definition of roles" (Susser & Watson, 1971). Travis (1966) points out that the young spinal cord injured adult faces a special problem: having just attained independence, he is now cast back into the dependent role. The presence of spinal cord injury in the young adult also prolongs the care-taking position of his parents, continuing the nuclear family structure past its usual limits.

For those whose family situation is unsuitable, or for those who have no families, community resources are usually tapped. Communities are frequently limited in terms of appropriate living facilities for the spinal cord injured, particularly for young adults. Nursing homes are a common

alternative (Steinberg, et al., 1968). While having the capacity to meet basic physical needs of disabled individuals, nursing homes are usually described as geriatrically oriented and primarily custodial, and as a result, are often inappropriate for young physically disabled adults. Furthermore, according to Wessen (1963), many of the institutions or residential settings in which the severely physically disabled must live have the characteristics of what Goffman (1961) has termed "total institutions." Such settings are characterized by close and constant surveillance and control of residents by those who operate the institution. Autonomy is restricted and dependency encouraged, even with the best intentions on the part of those in charge. Miller and Gwynne (1972) identify the most common orientation of residences for the chronically ill and/or physically disabled as being one of "warehousing," where the primary task is merely to prolong physical life.

It can be seen from the foregoing that even those who have completed a comprehensive rehabilitation program and are ready to develop further may find themselves in environments (whether their own homes or residential settings) which limit opportunities for physical mobility and social-vocational-educational development. The transition from rehabilitation centers to the community is problematic, especially after an extended period of inpatient services (McCoy & Rusk, 1953; McDaniel, 1969; Nagi, 1963; Rusk, 1959). Several studies have shown that sizeable numbers of rehabilitants are in need of additional services after rehabilitation programs are completed (Bean, 1972; Cogswell, 1968; Columbus & Fogel, 1971; Sankovsky & Newman, 1972; Wright & Trotter, 1968). Appropriate, affordable housing without architectural barriers, transportation, and continual nursing care

have been listed as primary needs which must be met if the rehabilitation process is not to regress or come to a standstill.

Wessen (1963) has recommended that those involved in physical rehabilitation services look to the mental health field for guidelines in solving the problems involved in "total institutions" and transition to post-discharge living, suggesting as models the concepts of the "open door hospital" or "halfway house," where residents have control over their own lives yet also receive basic, necessary services and support. Keith (1969) also stresses the need for innovations in the rehabilitation of the physically disabled, particularly in regard to self-government and increased responsibility for the residents in rehabilitation settings, both pre- and post-discharge. That such innovations could produce positive results can be seen in the functioning of a self-governing lodge established for post-discharge mental patients (Fairweather, Sanders, Maynard, Cressler, & Bleck, 1969). Raush and Raush (1968) point out that halfway houses "represent more than after-care with its connotations of medical recuperation for ex-hospital patients," describing them as environments "in which the residents can affect their circumstances to broaden opportunities." While recently, some moves have been made in the direction of establishing such residences for the physically disabled, Keith (1969) points out that such efforts have only just begun, and there is little information available as yet on these innovations.

In one such innovative effort to provide an appropriate living environment for the severely physically disabled and thus meet some of the needs described in this paper, the Texas Institute for Rehabilitation and Research (TIRR) has recently established a "cooperative self-support system"

for young adults (Stock, 1971). The residence is similar to those recommended by Wessen and is designed to "promote a gradual move toward self-sufficiency." The occupants are organized into a non-profit corporation in which they themselves "develop standards for new incoming residents, continued residency, and codes of behavior." TIRR personnel serve as consultants and offer supportive services (medical, vocational, etc.). Major goals of this residence are to provide "opportunities for physical, psychosocial mobility....opportunities to live independently and become vocationally successful" and to "counteract psychosocial isolation." The initial residents in the project were required to meet the following criteria: single, between the ages of 18 and 40, economically eligible for rent supplement housing (income below $3,600 per year), disability of a magnitude requiring assistance in activities of daily living, but not continuous medical care. The presence of the residence offers the severely physically disabled young adult a third alternative in post-discharge living situation.

Need for research on different living environments for the severely physically disabled has been recognized frequently (Friedson, 1963; Graham, 1963; Keith, 1969; Kutner, 1971; Vineberg, 1972). The study presented here is an evaluational one, aimed at evaluating the TIRR residence through comparing the daily lives of those living there with the daily lives of a group living in the other two alternatives (home and nursing home) also available in Houston, Texas to the physically disabled. The focus will be on the <u>effects</u> of these environments on the daily lives of those living in them. Frameworks categorizing different types of evaluative research have been developed by various authors. The approach here will be analogous to McMahon and Hutchinson's (1961) category of evaluation of

accomplishment (rather than evaluation of technique), Paul's (1956) assessment of effect (rather than effort or process), or Suchman's (1967) category of evaluation of efficiency. That is, rather than investigating what goes into the program, the effort and technique and processes involved, the focus will be on the outcome or results of whatever techniques and processes the program involves.

The TIRR residence will be evaluated from two perspectives: (1) In terms of how well the daily lives of those living there fulfill its predetermined goals in comparison with those living in other residential alternatives, (2) In terms of how closely the daily lives of those living there approximate a "norm" (represented by a non-disabled population) in comparison with those living in other residential alternatives. The first approach addresses itself to the question of whether in fact the residence program does what it is meant to do, and if so, whether it does it better than other residential alternatives. Traditionally, evaluative research has proceeded in this direction (Weiss, 1971). The second perspective is a broader one, and has a somewhat different philosophical basis. Using a non-disabled control group provides a base rate estimate for comparison of the disabled groups and provides a norm which is divorced from preconceived notions about what constitutes "good" or "desirable" daily activities. Both perspectives offer useful and relevant information and will be included here.

The orientation of this study is a "naturalistic" one. Since we are concerned with obtaining a descriptive picture of daily life and in assessing the effects of different living situations, we are not interested in manipulating the situation but rather in exploring the relationships which

actually exist between the type of residential environment and variation in daily life. Willems (1969) has characterized naturalistic research as tending toward being low in experimenter manipulation and low in imposition of units on behavior. This orientation seems best suited to achieving our purposes here. The environmental conditions we are interested in already exist, and people are already living their daily lives within these conditions. Thus we are aiming toward "selecting conditions of study" rather than "disrupting events" (Raush, 1969), in order to gain information about the "who, what, where" aspects of everyday living and their relationship to type of residential setting.

There are several relatively broad questions we hope to answer through this evaluation:

1. What differences, if any, in nature and scope of daily activities exist between two groups of disabled living in different environmental situations, one group living in the TIRR residence, the other at home or in nursing homes?

2. If such differences do exist, what is the nature of these differences; do the lives of those in the TIRR residence reflect its goals better than the lives of those living in other residential alternatives?

3. How do the disabled groups compare to the non-disabled group; does the TIRR group approximate the non-disabled group more closely than the other disabled group does?

CHAPTER III

METHODS

Subjects

Subjects were selected to comprise three groups: one composed of those living in the TIRR residence; a second composed of severely physically disabled living in their own homes or nursing homes; and a third of non-disabled individuals. Each group was made up of 12 subjects, giving a total of 36 subjects (Ss).

Since the TIRR residence was the primary target of evaluation and since selection bias may have been operating in the type of severely physically disabled individuals accepted for residence, Ss in the other disabled group were matched to the TIRR residents. In order to counteract the effects of selection bias as much as possible, disabled control group Ss were selected through a special procedure. A list of disabled individuals, TIRR ex-patients, was presented to the person who was primarily responsible for the original selection of the TIRR residence group. The list included present residents of the TIRR residence, individuals living at home, and those in nursing homes. The person who made the initial selection then rated those on the list on a scale of one to five for acceptability in the TIRR residence. From this list, the Ss in the disabled control group were matched as closely as possible to the TIRR residents on the following criteria: acceptability rating, age, marital status, sex, race, educational level, level of disability, and age at onset. Of the 12 TIRR residents, two had lived previously in a nursing home; therefore, these two were matched with two disabled individuals living in a nursing home while the remaining ten were matched with disabled individuals

living at home.

Initially, it was planned that the non-disabled control group would be selected by asking the TIRR residents to provide the names of some non-disabled friends of the same sex who might be interested in participating in the study. It was assumed that this procedure would yield a reasonable level of similarity on relevant matching variables. However, only a few of the TIRR residents could provide the names of friends who were sufficiently similar on the matching criteria. For this reason, nine of the twelve Ss in the non-disabled group were selected from various sources by the investigator. These sources included the subject pool of the University of Houston psychology department, acquaintances of the investigator, and students from classes taught by acquaintances of the investigator.

The matched triplets resulting from the subject selection process are described in Table 1. (The abbreviations "TQ" and "TP" stand for "traumatic quadriplegia" and "traumatic paraplegia," while "C" and "T" are customary abbreviations for "cervical" and "thoracic." Thus a diagnosis of TQ(C-5,6) indicates quadriplegia induced by injury to the spinal cord at the level of the fifth and sixth cervical vertebrae.) All Ss were unmarried and Caucasian. As can be seen in Table 1, four of the TIRR residents were neither employed or in school at the time of the study, but are matched with controls who were employed or in school. Three of the four TIRR residents were employed or in school at the time they were matched, but just prior to the actual study, became unemployed or dropped out of school.

TABLE 1

CHARACTERISTICS OF MATCHED SUBJECTS

GROUP	AGE	SEX	DISABILITY LEVEL	YEARS SINCE ONSET	YEARS OF SCHOOL	DEGREE	PRESENTLY EMPLOYED OR IN SCHOOL	RATING
TIRR	23	male	TQ(C-5,6)	4	17	HS	yes	2
Nursing Home	24	male	TQ(C-6,7)	6	13	HS	yes	2
Nondisabled	21	male			14	HS	yes	
TIRR	26	male	TQ(C-4,5,6)	11	18	BBA	no	3
Nursing Home	23	male	TQ(C-5,6)	8	13	HS	yes	2
Nondisabled	26	male			16	BS	yes	
TIRR	24	male	TQ(C-5,6)	7	17	HS	yes	2
Home	25	male	TQ(C-5,6)	7	13	HS	yes	2
Nondisabled	23	male			16	BA	yes	
TIRR	27	male	TQ(C-4,5)	7	16	HS	yes	2
Home	29	male	TQ(C-7)	10	13	HS	yes	1
Nondisabled	28	male			16	BA	yes	
TIRR	21	male	TQ(C-5,6)	5	14	HS	yes	2
Home	19	male	TQ(C-6)	3	12	-	yes	3
Nondisabled	21	male			13	HS	yes	
TIRR	26	male	TQ(C-6)	4	16	HS	yes	2
Home	30	male	TP(T-5)	10	12	HS	yes	1
Nondisabled	27	male			15	HS	yes	
TIRR	23	male	TQ(C-6)	6	17	HS	yes	2
Home	21	male	TQ(C-5,6)	4	14	HS	yes	2
Nondisabled	22	male			16	HS	yes	
TIRR	23	male	TQ(C-6,7)	7	16	HS	yes	2
Home	20	male	TP(T-5)	5	12	HS	yes	2
Nondisabled	20	male			14	HS	yes	
TIRR	29	male	TQ(C-5,6)	9	22	BS	no	3
Home	29	male	TQ(C-5,6)	11	12	HS	yes	4
Nondisabled	27	male			16	BA	yes	
TIRR	19	male	TQ(C-6,7)	2	14	HS	yes	3
Home	20	male	TP(T-4)	6	13	HS	yes	2
Nondisabled	21	male			13	HS	yes	
TIRR	19	male	TQ(C-4,5)	2	12	HS	no	2
Home	18	male	TQ(C-4,5)	2	12	-	yes	3
Nondisabled	19	male			13	HS	yes	
TIRR	24	female	TP(T-5)	2	13	HS	no	3
Home	25	female	TP(T-2)	1	13	HS	yes	2
Nondisabled	23	female			14	HS	yes	

Procedures

The data were collected by means of diaries, daily behavior records, kept by the Ss over a period of one week. Several alternative methods of data collection were considered and rejected (e.g., continuous direct observation, rejected as being too expensive and time consuming; direct observation on a time sampling basis, rejected as being too limited in terms of obtaining extensive information about the continuous stream of behavior). The diary method provided an economical procedure yielding extensive rather than intensive data. Since the study is concerned with the larger, "molar" events of daily behavior, it was believed that the level of data obtained would be adequate and Ss should find it within their abilities to remember and report such events. Further, it was felt that the non-threatening and innocuous nature of the method should minimize social desirability factors and resistance to participation.

Kalb (1971), using this procedure, found that participation and cooperation of Ss was quite high, suggesting that the task is not too demanding or threatening. While validity and reliability of self-report may be questioned, it was assumed that the non-threatening nature of the task and careful instruction should counteract both deliberate and unintentional distortion in the reporting of the Ss. Although the use of written records "frequently means substituting someone else's selective filter for your own...the Chinese proverb still holds:

> The palest ink is clearer than the best memory."
> (Webb, Campbell, Schwartz, & Secrest, 1966, p. 42)

Sachson (1970), in evaluating a mental health living unit program, found that of several methods utilized, a daily activity record (as given by Ss themselves) was the most satisfactory. Comparing it to direct observation,

participant observation, and sociometric questionnaires, she reported the virtues of the daily activity record to be its unobtrusiveness, economy, and extensive yield of relatively objective, quantifiable data.

The TIRR residence group Ss were initially informed of the research project through a letter from TIRR's principal consultant to the residence (Appendix A). The Ss were then telephoned and visited by the investigator. Since these Ss were aware that several research projects on the residence were being carried out and that the project results would be reported to funding agencies, they were not naive or uninterested in regard to the purposes of this study. A direct approach was used to elicit their honest cooperation. While they were not told the specific areas of concern in this study, they were told that the purpose of the study would be to obtain a descriptive picture of daily life in the TIRR residence, and they were requested to supply the names of non-disabled friends. After the task was explained in general, they were told that they would be contacted shortly to set up another visit by the investigator.

The disabled control Ss were first contacted by mail, through an introductory letter from TIRR (Appendix B) and then telephoned by the investigator. The Ss were told that TIRR was interested in improving the rehabilitation process and their assistance would be helpful in acquiring information about post-discharge living. If they were willing to find out more about the requirements of the study and possibly participate, they were told that they would be contacted shortly for a visit by the investigator.

Once appropriate non-disabled individuals were located by the investigator, they were contacted by telephone, and the general purpose and nature of the study was explained to them. If they were willing to participate,

they were told that they would be contacted shortly to set up an appointment for a visit by the investigator.

All of the individuals contacted about the study were willing to participate. Once the consent of all Ss had been obtained, and once each TIRR resident had been matched with a subject from each of the other two groups (disabled living at home or nursing home and non-disabled), the data collection process was scheduled so that it could be carried out over a period of three weeks. Each week, four TIRR residents and their matches from other groups were scheduled to keep diaries. The data collection period was extended over a period of three weeks in order to discourage TIRR resident collaboration and to reduce the effects of atypical events. All Ss were assigned code numbers to be used on all written documents so that anonymity would be preserved.

Once the schedule had been arranged, each S was contacted and an appointment set up for a visit by the investigator. During this visit, Ss were given a booklet (Appendix C) containing a manual of instructions and the diary sheets. The investigator spent as much time as necessary going over the instructions with each S, clarifying any questions each S had. Confidentiality was stressed, and it was pointed out that only the investigator would know what code number each S had been assigned. Those Ss who were or had been associated with TIRR were told that the information would in no way affect their relationship with TIRR. The importance of each S's contributions was emphasized, and all Ss were told that they would be informed of the general findings of the study. Finally, it was stressed to each S that he should call the investigator at any time if he had questions or problems in keeping the diary.

Each S was telephoned by the investigator the day before he was to start keeping the diary. The call was intended to serve the purpose of continuing contact with the Ss and thus provide encouragement as well as to remind the Ss of when to begin. Of the total number of Ss, three failed to keep their diaries at the scheduled time. Of these three, one reported that he forgot; the second reported that he was involved in a car accident which, although it was minor and he was unhurt, affected his plans for the week; and the third reported that he was ill the day he was to begin keeping the diary. These three were re-scheduled to begin keeping their diaries the following week. At the end of each S's week of diary keeping, the investigator picked up the diary as soon as was convenient for each S.

Organization of Data

The data were organized into 15 dependent variables, derived from the Ss' diaries. These categories were devised in order to provide measures of variety, scope, and distribution of daily activities, interpersonal contacts, and settings or locations entered. They represent different ways of measuring or describing the distribution of behavior in everyday life.

1. Number of activities engaged in during the week. This variable was derived by adding the number of activities reported by each S for the week, yielding the total number of times an S engaged in activities, without regard to repetition of activities. That is, if an S reported that he went to a movie on two different occasions, the two occasions were counted as two activities.

2. Number of varieties of activities engaged in during the week. This variable was computed by adding the number of different types of activities reported by each S for the week. For example, going to a movie twice

during the week was counted as one variety of activity.

3. Number of activities performed with others. This variable was computed by adding the number of activities each S reported as involving others, regardless of whether only one or more than one other person was involved. That is, all activities in which others participated and interacted with the S were included here.

4. Number of activities performed alone. This variable was computed by adding the number of activities each S reported as not directly involving others. To illustrate, if an S reported going to the laundromat alone and did not report the involvement of others, this activity was computed into this variable even though others may have been present at the laundromat.

5. Number of persons interacted with. This variable was derived by adding the number of persons interacted with, without regard to repetition of particular persons. For example, if an S reported that he was accompanied by one friend on two different occasions, he received a score of two on this variable.

6. Number of different persons interacted with. This variable was computed by adding the number of different persons each S reported having interacted with. In this case, the example given for the previous variable (5) was counted as one for this variable.

7. Number of varieties of persons interacted with. This variable was computed by adding the number of different types of persons interacted with by each S during the week. For example, varieties of persons were family, friend, relative, clerk, attendant, etc.

8. Number of persons interacted with other than family or attendant. This variable was computed by adding the number of different persons

interacted with, excluding members of the S's family or an attendant.

9. Number of entrances into settings. This variable was computed by adding the number of times settings or locations were entered by each S during the week, regardless of repetition of settings. That is, even though as S may have entered his residence more than once during the week, here each entrance into that setting would be counted.

10. Number of different settings entered. This variable was computed by adding the number of different settings entered by each S. In this case, for the example cited for the previous variable (9), only one setting was counted here.

11. Number of types of settings entered. This variable was computed by adding the number of times an S reported entering a setting which fell into a particular variety or type. In this case, if an S reported going to two different post offices, only one type of setting was counted here, although the S entered two different settings.

12. Number of entrances into settings outside residence. This variable was computed by adding the number of times an S entered a setting outside his residence.

In addition, the activity data were organized under three classifications which seemed relevant to the issues important in this study: vocational-educational, social-recreational, and business-commercial. These three general classifications were selected to represent a summary of daily activities which are considered important in the rehabilitation process. While medical, nutritional, and other self-maintenance activities are also important, here we are concerned with the aspects of functioning which are of a more "social" nature, relating to the larger social structure or community. These three classifications should not be considered as exhaustive

or comprehensive.

13. Number of vocational-educational activities. This variable was computed by adding the number of activities falling into this classification for each S during the week. Activities were classified as vocational-educational if they were primarily related to education or vocation; for example, studying, attending classes, participating in a vocational training session, going to a job interview, or any of the activities involved in the individual's occupation.

14. Number of social-recreational activities. This variable was derived by adding the number of activities falling into this classification for each S during the week. Activities were classified as social-recreational if they were primarily related to play, entertainment, games, or sports, and were the more "formal" forms of recreation; for example, being at a party, going to a football game, seeing a movie. Less "formal" and more solitary recreational activities, such as watching television, reading a magazine, were not included here.

15. Number of business-commercial activities. This variable was derived by adding the number of activities falling into this classification for each S during the week. Activities were classified as business-commercial if they involved financial transactions for goods or services; for example, buying clothes, shopping for groceries, seeing an insurance salesman, having a car repaired. Business or commercial activities which were carried out as a function of the S's occupation were not included here.

Reliability of Derivation of Dependent Variables

Four diaries were randomly selected from each of the three subject groups. The 15 variables were derived from the 12 diaries independently

by the investigator and a second judge. The second judge was generally unfamiliar with this type of data and had no prior experience in deriving such variables. Prior to deriving the variables, the second judge was given the definitions of the variables as described above. In order to obtain a measure of reliability for each of the 15 variables, the following formula, representing the percentage of inter-judge agreement, was used:

$$\% \text{ agreement} = 100 \times \frac{2 \text{ (number of items both agreed upon)}}{\text{number of items selected by investigator + number of items selected by judge}}$$

The resulting reliabilities for each of the dependent variables are presented in Table 2, which indicates satisfactory levels of agreement for all dependent variables.

Statistical Analysis

In order to investigate patterns of internal structure among the 15 variables and to examine similarities or differences in those patterns across the three groups, a principal components factor analysis and a Varimax rotation toward simplification of structure were carried out for the three groups as a whole and also independently for each group.

To examine the differences among individuals and between groups on each of the 15 dependent variables, Wilcoxon matched-pairs signed ranks tests were used. Since each TIRR resident was matched with an individual in nursing home or at home and with a non-disabled individual, matched pairs were available for these tests. Each S was compared with the two other matched Ss on each variable. Therefore, 45 separate Wilcoxon matched-pairs signed-ranks tests were carried out, three tests on each of the 15 variables.

TABLE 2

RELIABILITY STUDY ON THE 15 DEPENDENT VARIABLES

Variable	Total number of items identified*	Total number both agreed upon	Percent of agreement**
1. Number of activities	1547	723	93
2. Number of varieties of activities	363	179	98
3. Number of activities performed with others	724	353	97
4. Number of activities performed alone	883	412	93
5. Number of persons interacted with, without regard to repetition	1134	551	97
6. Number of different persons interacted with	682	336	98
7. Number of varieties of persons	311	155	99
8. Number of persons interacted with other than family or attendant	69	33	95
9. Number of entrances into settings	505	248	98
10. Number of different settings entered	181	85	93
11. Number of types of settings entered	123	60	97
12. Number of entrances into settings outside residence	330	163	98
13. Number of vocational-educational activities	189	94	99
14. Number of social-recreational activities	95	43	91
15. Number of business-commercial activities	83	40	91

*Figures in this column represent the sum of the items identified by both the investigator and the judge

**The percentages of agreement were calculated by the following formula:

$$\% \text{ agreement} = 100 \times \frac{2(\text{number of items both agreed upon})}{\text{number of items selected by investigator} + \text{number of items selected by judge}}$$

The significance level chosen was .05 for two-tailed tests.

Tilton's procedure for measurement of overlapping was used to determine the extent of similarity of the three groups (Tilton, 1937). This procedure is based on the ratio of the difference between the means of the two groups to the average of the two standard deviations, and provides an estimate of percentage of overlapping of two distributions. The statistic is based upon the assumption of normality of the two distributions, but Tilton points out that for "theoretical purposes, it is frequently more desirable to know what the overlapping would be for normal distributions of the same or equal populations, than to know by counting what it is in the actual situation" (Tilton, 1937, p. 660). By computing the percentage of overlap between the non-disabled group and each of the other two groups (TIRR and home-nursing home), a measure revealing which of the two disabled groups more closely approximates the non-disabled group can be obtained.

CHAPTER IV

RESULTS

Quantitative Structure of the Data

In order to determine patterns of underlying structure among the 15 variables, principal components factor analyses were carried out for the three groups considered as one, and independently for each of the three groups.

The major variables constituting the first two factors, and their factor loadings, for all three groups considered together, are shown in Table 3. (For all factors here and in the following presentation, variables which had factor loadings of less than .70 were omitted.) The first factor accounted for 32% of the variance. Variables which loaded heavily on this factor were: number of entrances into settings, number of different settings entered, number of types of settings entered, number of entrances into settings outside residence, and number of social-recreational activities. The second factor, which accounted for 29% of the variance, was primarily composed of the following variables: number of activities performed with others, number of persons interacted with, number of different persons interacted with, and number of varieties of persons interacted with.

For the TIRR group, the major variables constituting the first two factors, and their factor loadings, are presented in Table 4. Factor I in the TIRR group accounted for 37% of the variance and was primarily composed of five variables: number of activities, number of activities performed with others, number of persons interacted with, number of persons interacted with other than family or attendant, and number of different persons interacted with. The second factor, which accounted for 21% of the variance,

TABLE 3

MAJOR VARIABLES CONSTITUTING FACTORS I AND II AND THEIR LOADINGS FOR THE THREE GROUPS AS A WHOLE

Variables	Factor Loadings
Factor I	
Number of entrances into settings	.91
Number of different settings entered	.97
Number of types of settings entered	.87
Number of entrances into settings outside residence	.92
Number of social-recreational activities	.75
Factor II	
Number of activities performed with others	.90
Number of persons interacted with	.94
Number of different persons interacted with	.84
Number of varieties of persons interacted with	.85

TABLE 4

MAJOR VARIABLES CONSTITUTING FACTORS I AND II AND THEIR LOADINGS FOR TIRR RESIDENCE GROUP

Variables	Factor Loadings
Factor I	
Number of activities	.78
Number of activities performed with others	.99
Number of persons interacted with	.97
Number of persons interacted with other than family or attendant	.93
Number of different persons interacted with	.93
Factor II	
Number of different settings entered	.88
Number of social-recreational activities	.81

primarily comprised two variables: number of different settings entered and number of social-recreational activities.

Factor I for the home-nursing home group, as shown in Table 5, accounted for 44% of the variance and was primarily made up of seven variables: number of persons interacted with other than family or attendant, number of entrances into settings, number of different settings entered, number of types of settings entered, number of entrances into settings outside residence, number of social-recreational activities, and number of business-commercial activities. Factor II, which accounted for 27% of the variance, was composed primarily of three variables: number of activities, number of activities performed with others, number of persons interacted with.

In the non-disabled group, as presented in Table 6, the first factor accounted for 27% of the variance and principally comprised five variables: number of entrances into settings, number of different settings entered, number of types of settings entered, number of entrances into settings outside residence, number of business-commercial activities. Factor II accounted for 23% of the variance and was composed primarily of three variables: number of activities, number of activities performed with others, number of varieties of persons interacted with.

As can be seen from the foregoing, the variance in the data, whether in the three groups considered together or independently, is accounted for by two sets of variables which could be characterized as "settings" variables and "people contact" variables. These two groups of variables are highly similar in all three subject groups. In the home-nursing home and non-disabled groups, the first factor is composed principally of variables relating to settings, with variables relating to persons being secondary.

TABLE 5

MAJOR VARIABLES CONSTITUTING FACTORS I AND II AND THEIR LOADINGS FOR HOME-NURSING HOME GROUP

Variables	Factor Loadings
Factor I	
Number of persons interacted with other than family member of attendant	.74
Number of entrances into settings	.96
Number of different settings entered	.96
Number of types of settings entered	.88
Number of entrances into settings outside residence	.98
Number of social-recreational activities	.83
Number of business-commercial activities	.94
Factor II	
Number of activities	.73
Number of activities performed with others	.85
Number of persons interacted with	.95

TABLE 6

MAJOR VARIABLES CONSTITUTING FACTORS I AND II AND THEIR LOADINGS FOR NON-DISABLED GROUP

Variables	Factor Loadings
Factor I	
Number of entrances into settings	.92
Number of different settings entered	.92
Number of types of settings entered	.80
Number of entrances into settings outside residence	.92
Number of business-commercial activities	.71
Factor II	
Number of activities	.78
Number of activities performed with others	.81
Number of varieties of persons interacted with	.88

In the TIRR group, however, the first factor is primarily composed of variables relating to persons, the second factor being one more related to settings. Such groupings of variables and differences in order of groupings suggest that significant differences may exist among subject groups in a consistent fashion on variables that load together, e.g., consistent group differences on "settings" variables and "people contact" variables.

Comparisons on Each of the Dependent Variables

Of the 45 Wilcoxon matched-pairs signed-ranks analyses carried out, 16 of the comparisons reached the .05 level of significance. These 16 comparisons which showed significant differences, and the direction of these differences, are presented in Table 7. There were no significant differences among the groups on four of the 15 dependent variables: number of activities engaged in during the week, number of activities performed with others, number of varieties of persons interacted with, and number of business-commercial activities.

As can be seen in Table 7, a significant number of Ss in the home-nursing home group (H-NH) engaged in fewer varieties of activities than did their matches in the non-disabled group. When TIRR Ss were compared with their matches in either the home-nursing home group or non-disabled group, no significant differences were found.

In regard to the number of activities carried out alone, TIRR Ss carried out fewer activities alone than did their matches in the non-disabled group. There were no significant differences between the TIRR Ss and the home-nursing home Ss, nor between the non-disabled Ss and the home-nursing home Ss on this variable.

When comparisons were made on the number of persons interacted with

TABLE 7

SIGNIFICANT DIFFERENCES AND DIRECTION OF DIFFERENCES

AMONG MATCHED PAIRS ON DEPENDENT VARIABLES

Variable	Direction of Significant Difference ($p \leq .05$)	No. Pairs Showing Difference*
1. Number of activities	-	-
2. Number of varieties of activities	H-HN< Non-disabled	9
3. Number of activities performed with others	-	-
4. Number of activities performed alone	TIRR< Non-disabled	12
5. Number of persons interacted with	-	-
6. Number of persons interacted with other than family or attendant	TIRR< H-NH	9
7. Number of different persons interacted with	TIRR< H-NH	10
8. Number of varieties of persons interacted with	-	-
9. Number of entrances into settings	TIRR< Non-disabled H-NH< Non-disabled	12 11
10. Number of different settings entered	TIRR< Non-disabled H-NH< Non-disabled	11 12
11. Number of types of settings entered	TIRR< Non-disabled H-NH< Non-disabled	10 11
12. Number of entrances into settings outside residence	TIRR< Non-disabled H-NH< Non-disabled	12 11
13. Number of vocational-educational activities	TIRR< Non-disabled H-NH< Non-disabled	9 9
14. Number of social-recreational activities	TIRR< Non-disabled H-NH< Non-disabled	9 9
15. Number of business-commercial activities	-	-

* The number of matched pairs included in each comparison was 12; therefore 12 is the maximum number of pairs which might show a difference in a particular direction.

other than family or attendant, Ss in the TIRR group interacted with more persons than did the Ss in the home-nursing home group. When the TIRR Ss were compared with their matches in the non-disabled group, or when the home-nursing home Ss were compared with their matches in the non-disabled group, no significant differences were found.

A similar pattern was obtained when comparisons were made on the next variable, number of different persons interacted with. Again the TIRR Ss interacted with more persons than did their matches in the home-nursing home group. Also, there were again no significant differences when the TIRR Ss were compared with the non-disabled Ss or when the home-nursing home Ss were compared with the non-disabled Ss.

Comparisons made on variables which were related to settings or locations entered also showed a consistent pattern. In these comparisons, the Ss in both disabled groups made fewer entrances into settings, entered fewer different settings, entered fewer types of settings, and made fewer entrances into settings outside their residence than did their matches in the non-disabled group. There were no significant differences between the matched Ss in the two disabled groups.

The relationships just described were also evident when comparisons were made on number of vocational-educational activities and number of social-recreational activities. The Ss in both disabled groups reported fewer vocational-educational activities and fewer social-recreational activities than their matches in the non-disabled group. Again there were no significant differences between the matched Ss in the two disabled groups.

In order to explore group variation and central tendency more directly, parametric tests were used as well. Analysis of variance for repeated

measures on a single factor and the Newman-Keuls procedure for differences between pairs of means (Winer, 1962) were selected as being appropriate parametric tests. Since subjects were matched, the scores of the matched triplets on a particular variable were treated as analogous to scores of the same subject under three different treatment conditions. Thus, 15 separate analyses of variance of this type were carried out, along with the Newman-Keuls tests for differences between all pairs of means. The results were consistent with those of the Wilcoxon; significant differences were found on the same variables between the same groups and at the same level of significance.

Extent of Similarity of Disabled Groups to Non-Disabled Group

Using Tilton's method of analysis of overlap (Tilton, 1937), the extent of overlapping between the non-disabled group and the two disabled groups was computed. The group means and percentages of overlap are presented in Table 8. According to Dunnette (1966), for overlapping values above 80%, two group distributions should be considered as essentially the same, while values between 50% and 75% denote "fairly good separation between two groups," such a difference being "practically useful." Values below 45% indicate a "highly useful" discrimination between groups.

In regard to number of activities, as can be seen in Figure 1, both disabled groups are quite similar to the non-disabled group, the percentages of overlap being over the 75% limit of "fairly good separation."

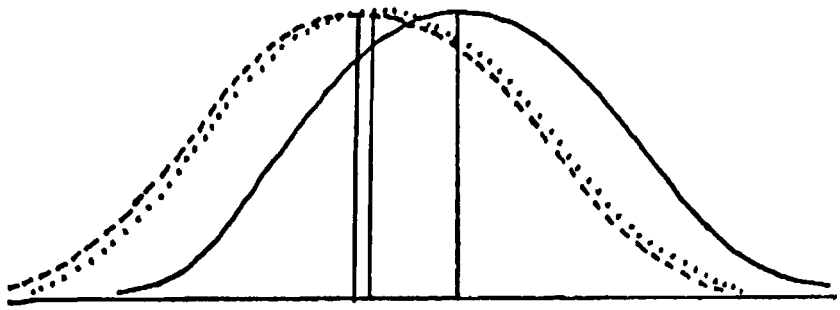
Figure 2, depicting number of varieties of activities, again shows both disabled groups to be highly similar to the non-disabled group.

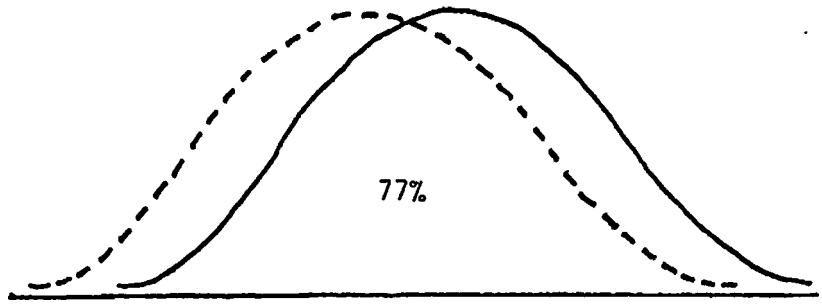
In Figure 3, representing number of activities performed with others, a similar pattern is evident. The percentages of overlap for the non-disabled

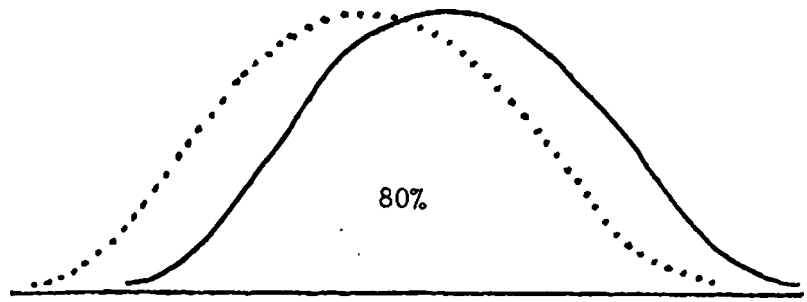
TABLE 8

GROUP MEANS AND PERCENTAGES OF OVERLAP OF DISTRIBUTIONS

Variable	GROUP MEANS			% OVERLAP	
	TIRR	H-NH	Non-Disabled	TIRR/Non-Disabled	H-NH/Non-Disabled
1. Number of activities	81.58	82.00	93.08	77	80
2. Number of varieties of activities	19.00	16.08	21.25	98	96
3. Number of activities performed with others	51.08	43.33	40.92	82	95
4. Number of activities performed alone	30.25	38.50	53.85	43	66
5. Number of persons interacted with	87.75	71.00	64.41	73	92
6. Number of persons interacted with other than family or attendant	67.17	30.83	47.75	72	72
7. Number of different persons interacted with	26.08	13.75	23.00	88	69
8. Number of varieties of persons interacted with	4.17	3.25	3.50	74	92
9. Number of entrances into settings	15.33	18.33	41.83	13	40
10. Number of different settings entered	7.83	6.67	14.91	35	28
11. Number of types of settings entered	5.83	5.33	9.42	35	34
12. Number of entrances into settings outside residence	8.91	11.58	16.33	15	52
13. Number of vocational-educational activities	7.75	8.75	16.67	39	58
14. Number of social-recreational activities	7.00	4.41	9.58	71	56
15. Number of business-commercial activities	2.53	2.16	4.75	96	96







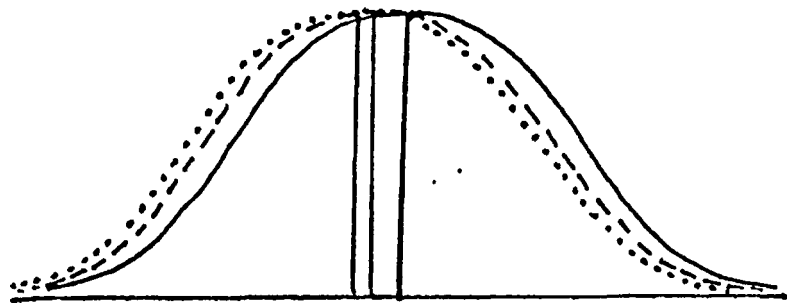
Non-Disabled

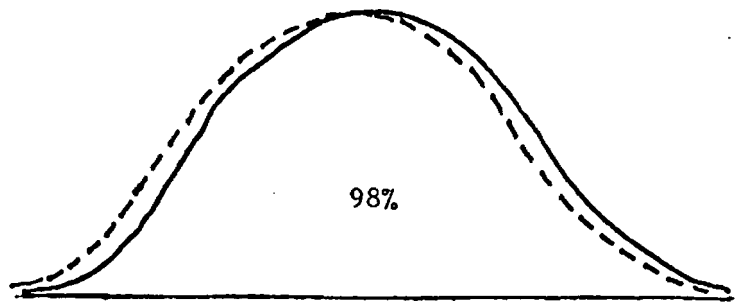
TIRR

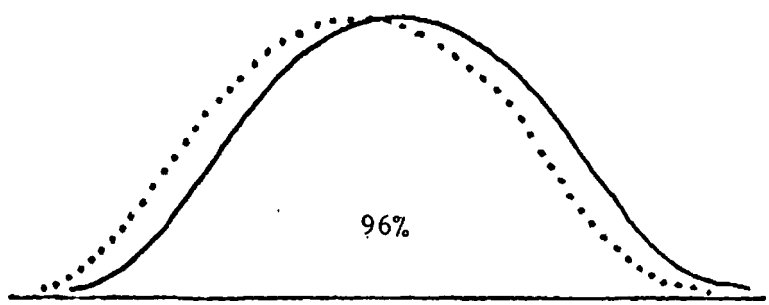
Home-Nursing Home

FIGURE 1

PERCENTAGES OF OVERLAP FOR NUMBER OF ACTIVITIES







Non-Disabled

TIRR

Home-Nursing Home

FIGURE 2

PERCENTAGE OF OVERLAP FOR NUMBER OF VARIETIES OF ACTIVITIES

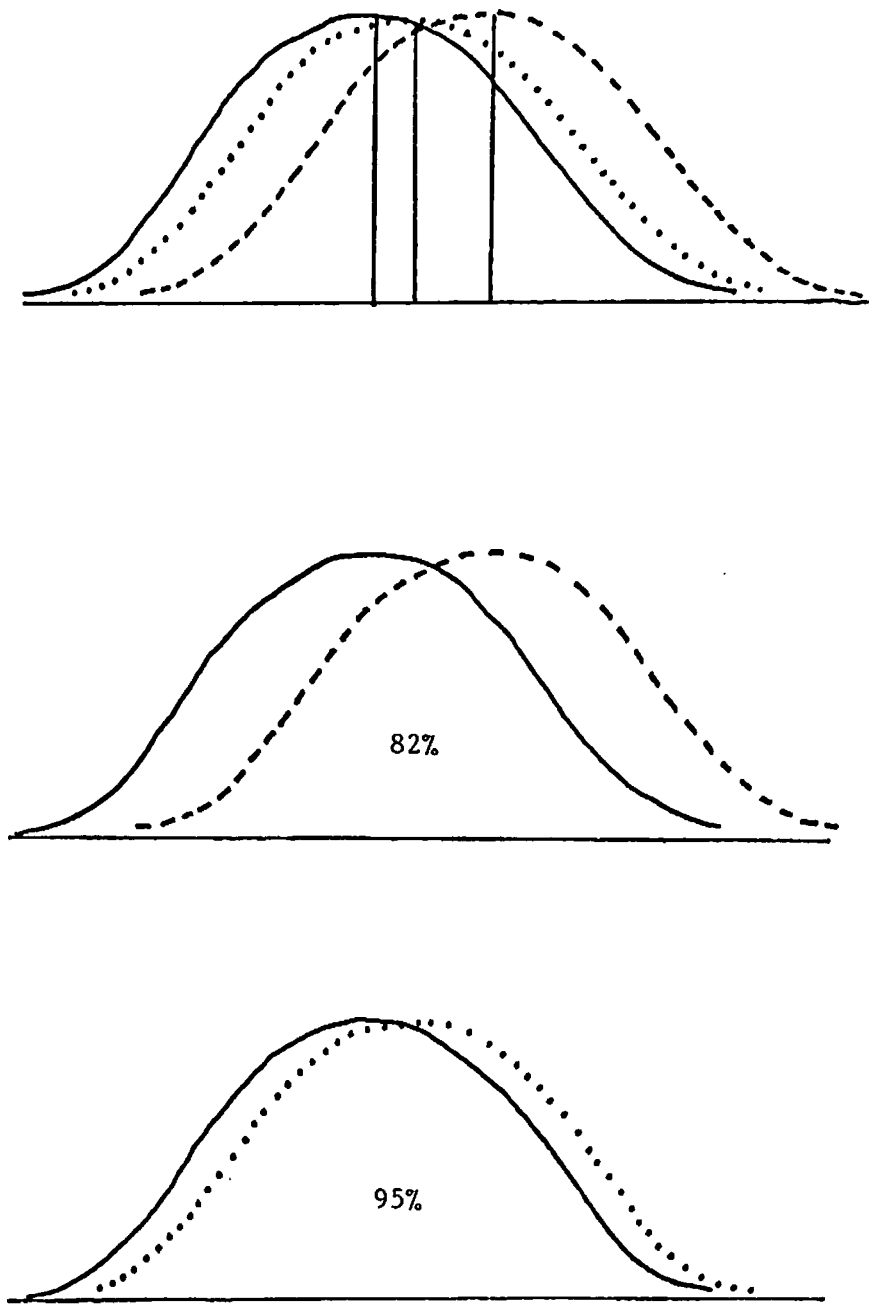


FIGURE 3

PERCENTAGES OF OVERLAP FOR NUMBER OF ACTIVITIES PERFORMED WITH OTHERS

group with the two disabled groups are again quite high.

When the variable of number of activities performed alone is considered, as shown in Figure 4, the home-nursing home group distribution overlaps more with that of the non-disabled group than does that of the TIRR group, both disabled groups being discriminably different from the non-disabled group.

In Figure 5, representing number of persons interacted with, the home-nursing home group distribution is essentially the same as that of the non-disabled group, while that of the TIRR group is discriminably different.

In regard to number of persons interacted with other than family or attendant, shown in Figure 6, the distributions of both disabled groups are different from that of the non-disabled group, the percentages of overlap being equal even though overlap occurs at different points on the distribution of the non-disabled group.

In Figure 7, which depicts number of different persons interacted with, the TIRR group distribution can be considered essentially the same as that of the non-disabled group, while the home-nursing home group is discriminably different.

In regard to number of varieties of persons interacted with, as shown in Figure 8, the home-nursing home group distribution is highly similar to that of the non-disabled group, with that of the TIRR group being more different.

Figure 9, representing number of entrances into settings, shows both disabled groups to be highly different from the non-disabled group, with the TIRR group showing the least amount of overlap.

On the variable of number of different settings entered, shown in

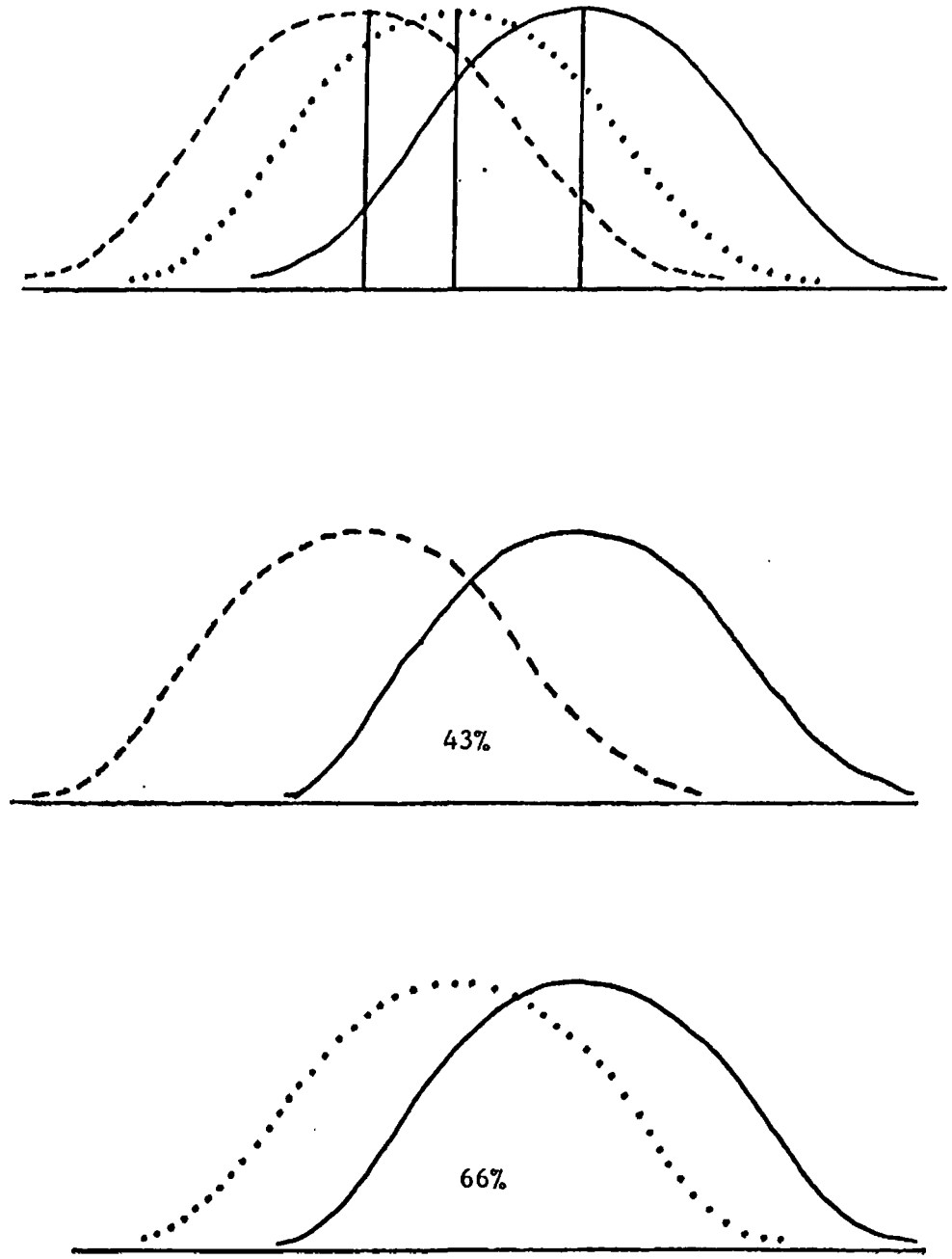


FIGURE 4

PERCENTAGES OF OVERLAP FOR NUMBER OF ACTIVITIES

PERFORMED ALONE

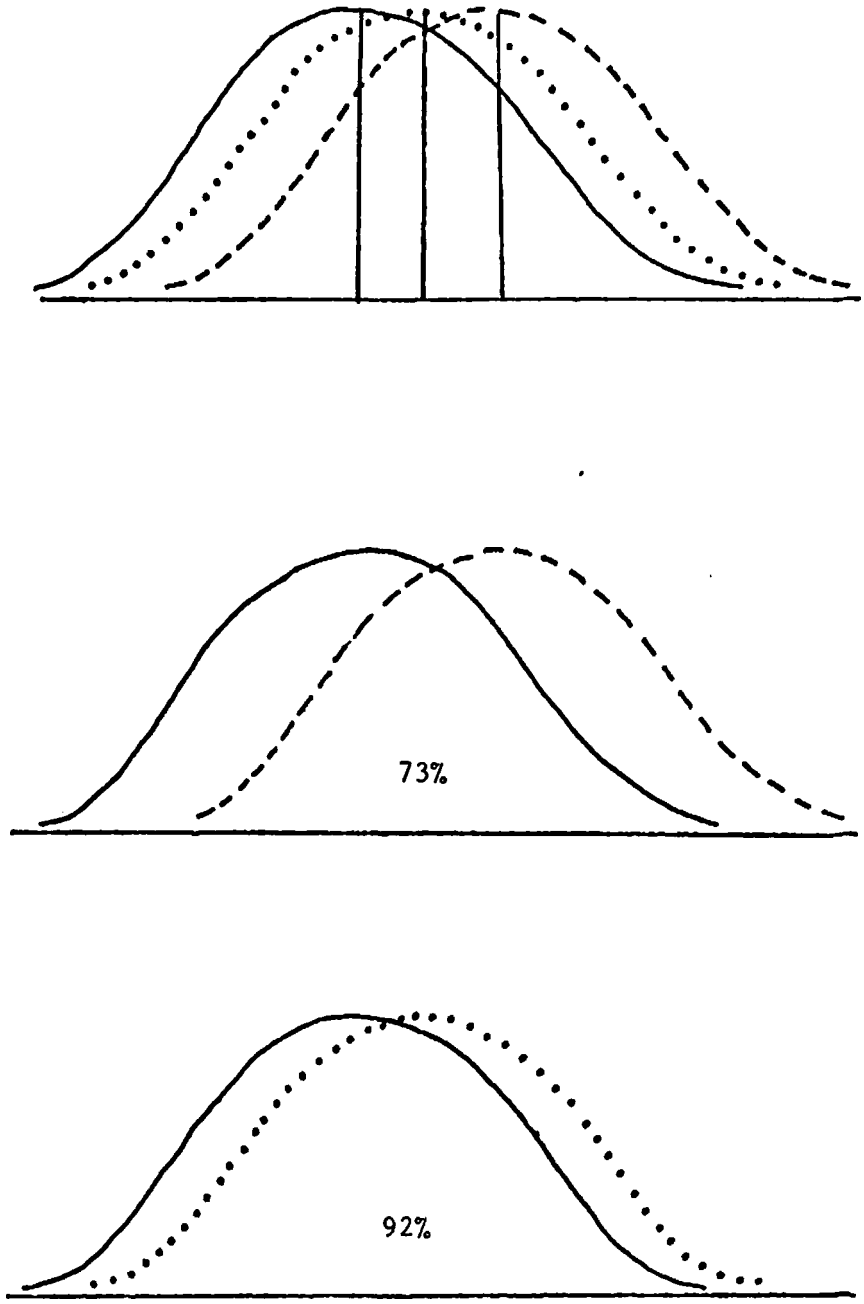
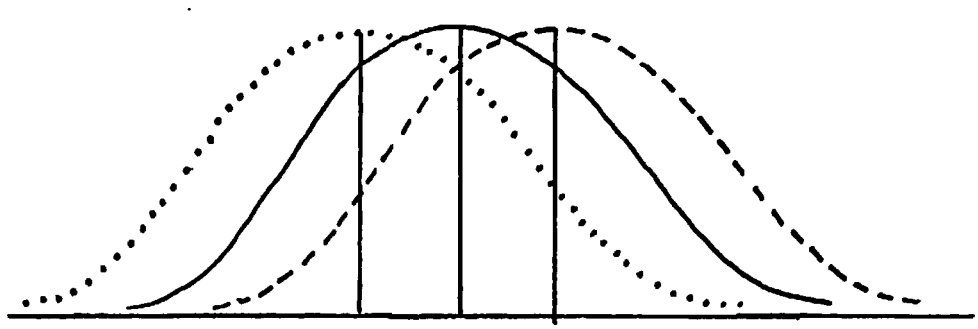
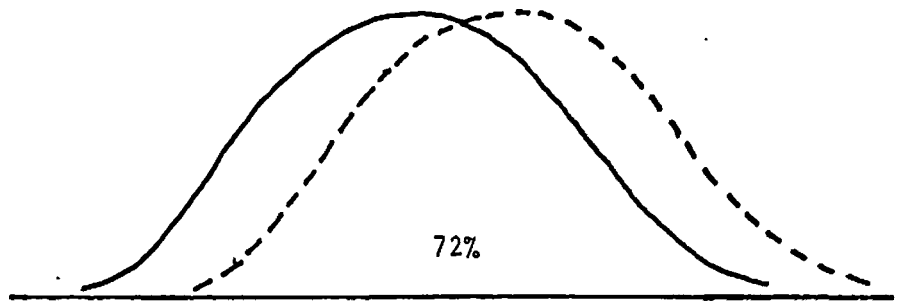
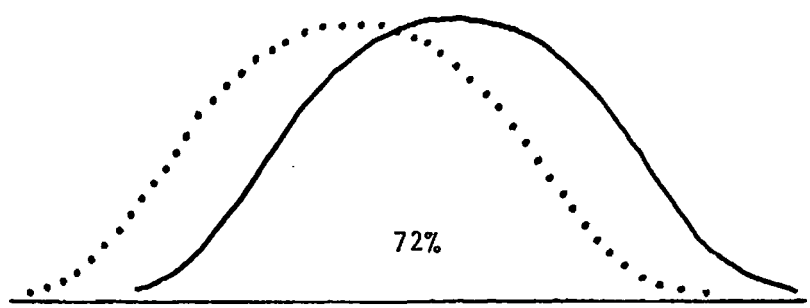


FIGURE 5

PERCENTAGES OF OVERLAP FOR NUMBER OF PERSONS INTERACTED WITH







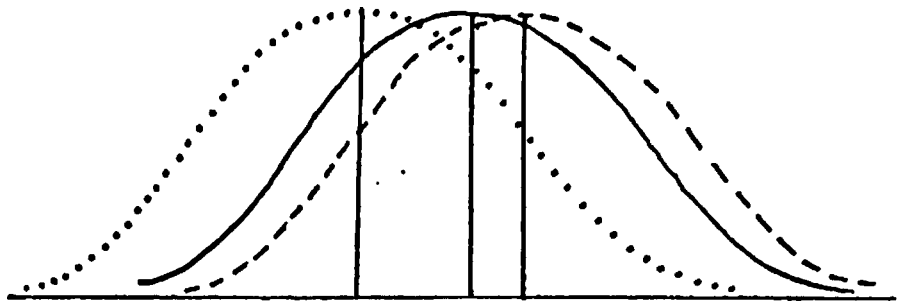
——— Non-Disabled

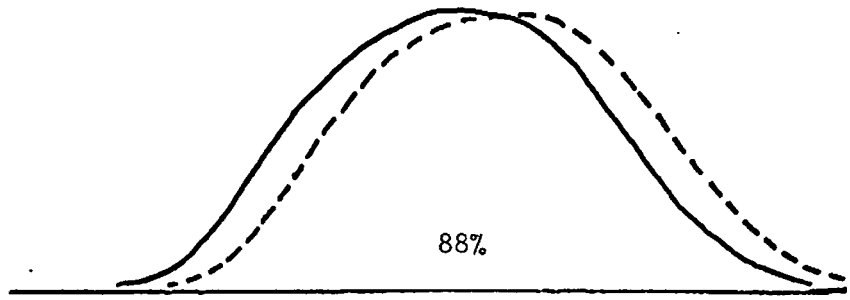
– – – – TIRR

••••• Home-Nursing Home

FIGURE 6

PERCENTAGES OF OVERLAP FOR NUMBER OF PERSONS INTERACTED WITH OTHER THAN FAMILY OR ATTENDANT





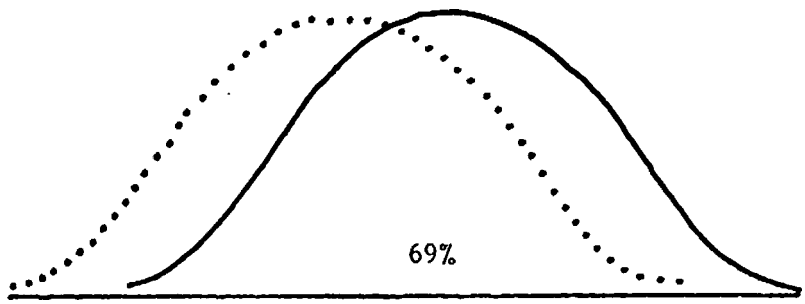


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FIGURE 7

PERCENTAGES OF OVERLAP FOR NUMBER OF DIFFERENT PERSONS INTERACTED WITH

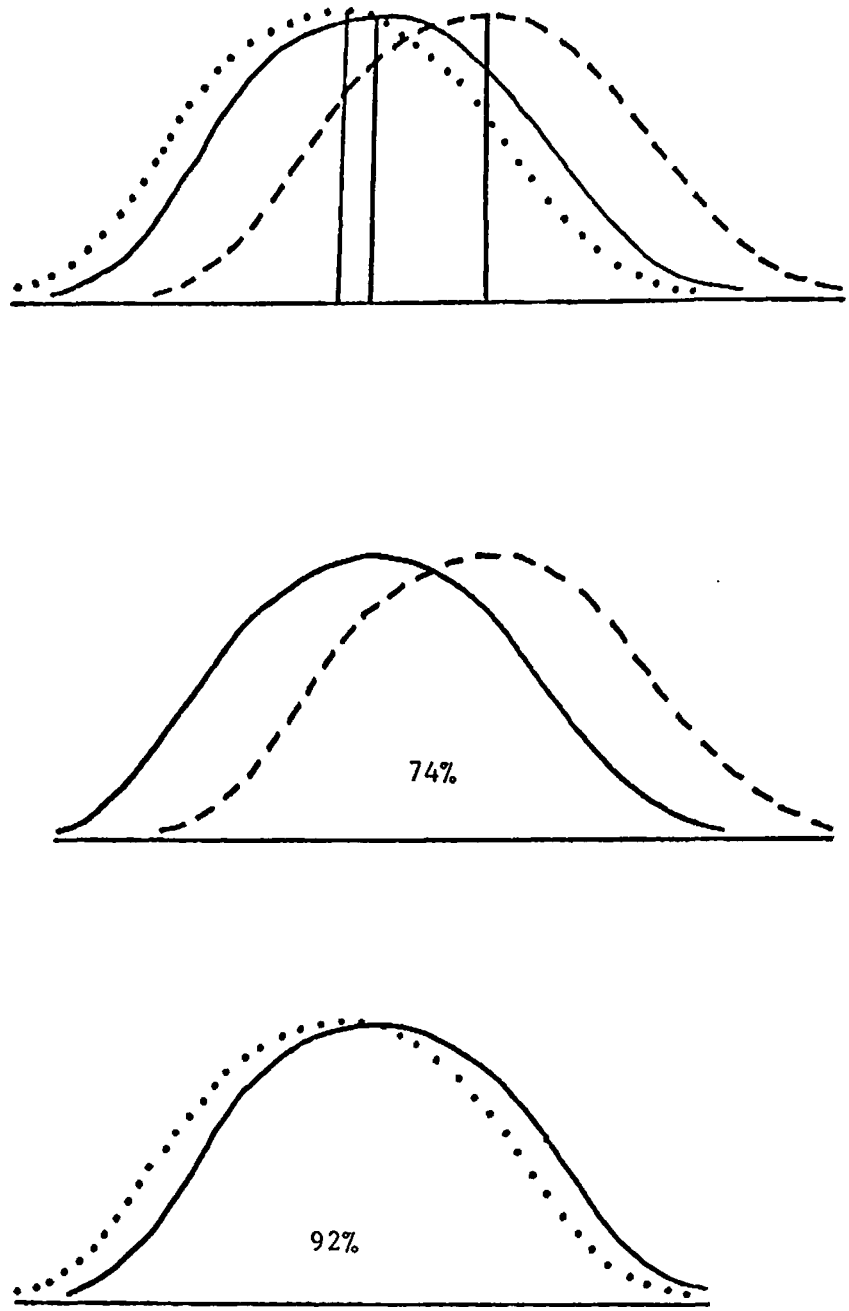
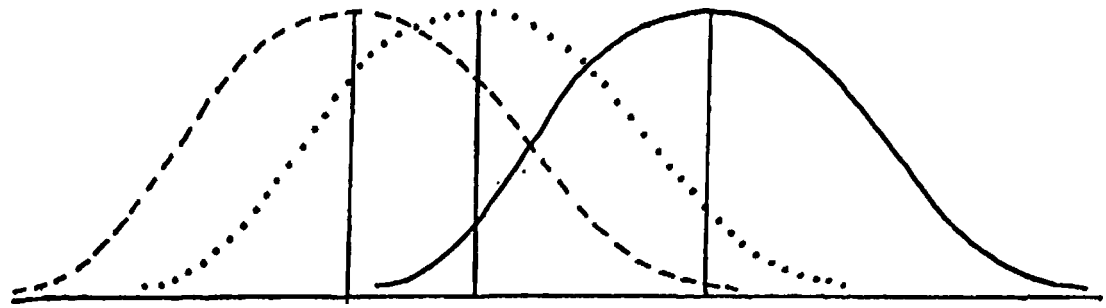
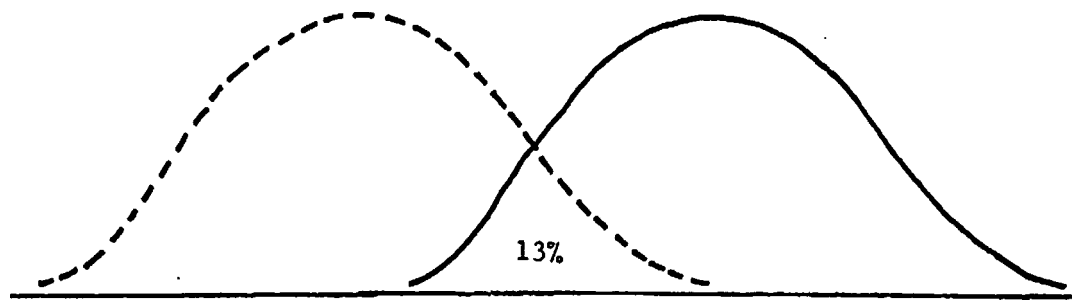


FIGURE 8

PERCENTAGES OF OVERLAP FOR NUMBER OF VARIETIES

OF PERSONS INTERACTED WITH





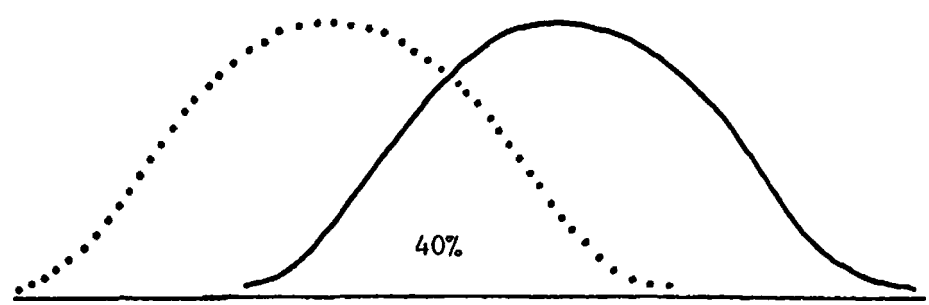


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FIGURE 9

PERCENTAGES OF OVERLAP FOR NUMBER OF ENTRANCES INTO SETTINGS

Figure 10, both disabled groups are again quite different from the non-disabled group. In this case, the TIRR group is somewhat more similar to the non-disabled group than is the home-nursing home group.

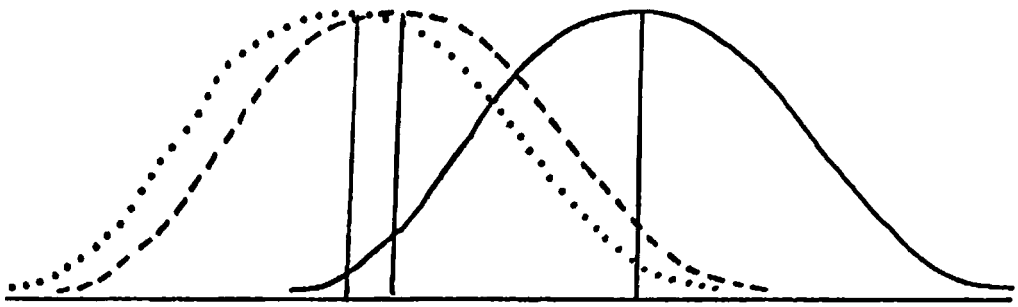
A similar pattern is evident in Figure 11, representing number of types of settings entered. The two disabled groups are again quite different from the non-disabled group.

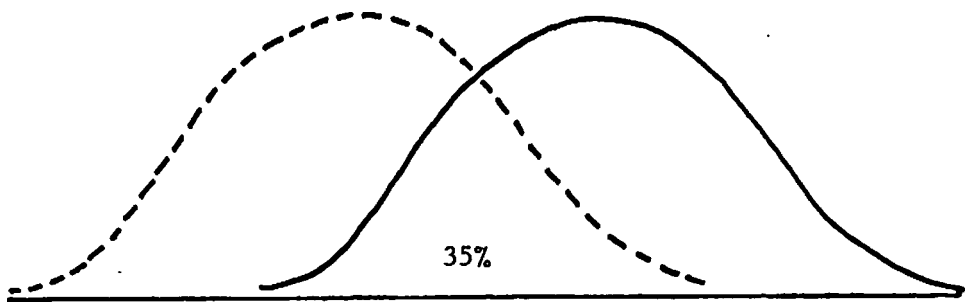
In Figure 12, depicting number of entrances into settings outside residence, the home-nursing home group is more similar to the non-disabled group than is the TIRR group. The TIRR group is quite different from the non-disabled group in this case.

In regard to number of vocational-educational activities, shown in Figure 13, the home-nursing home group is again more similar to the non-disabled group than is the TIRR group.

A reversal of the pattern just described can be seen in Figure 14. In this case, number of social-recreational activities, the TIRR group is more similar to the non-disabled group than is the home-nursing home group, though both disabled groups are discriminably different from the non-disabled group.

In regard to number of business-commercial activities, as shown in Figure 15, there is no discriminable difference between the groups. The distributions are essentially the same.





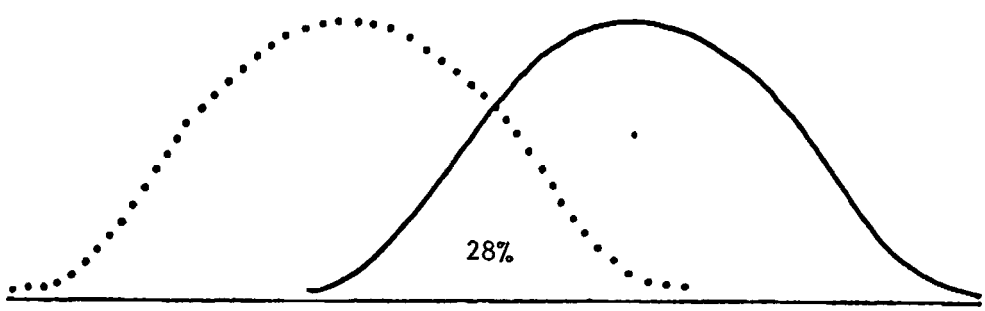


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FIGURE 10

PERCENTAGES OF OVERLAP FOR NUMBER OF

DIFFERENT SETTINGS ENTERED

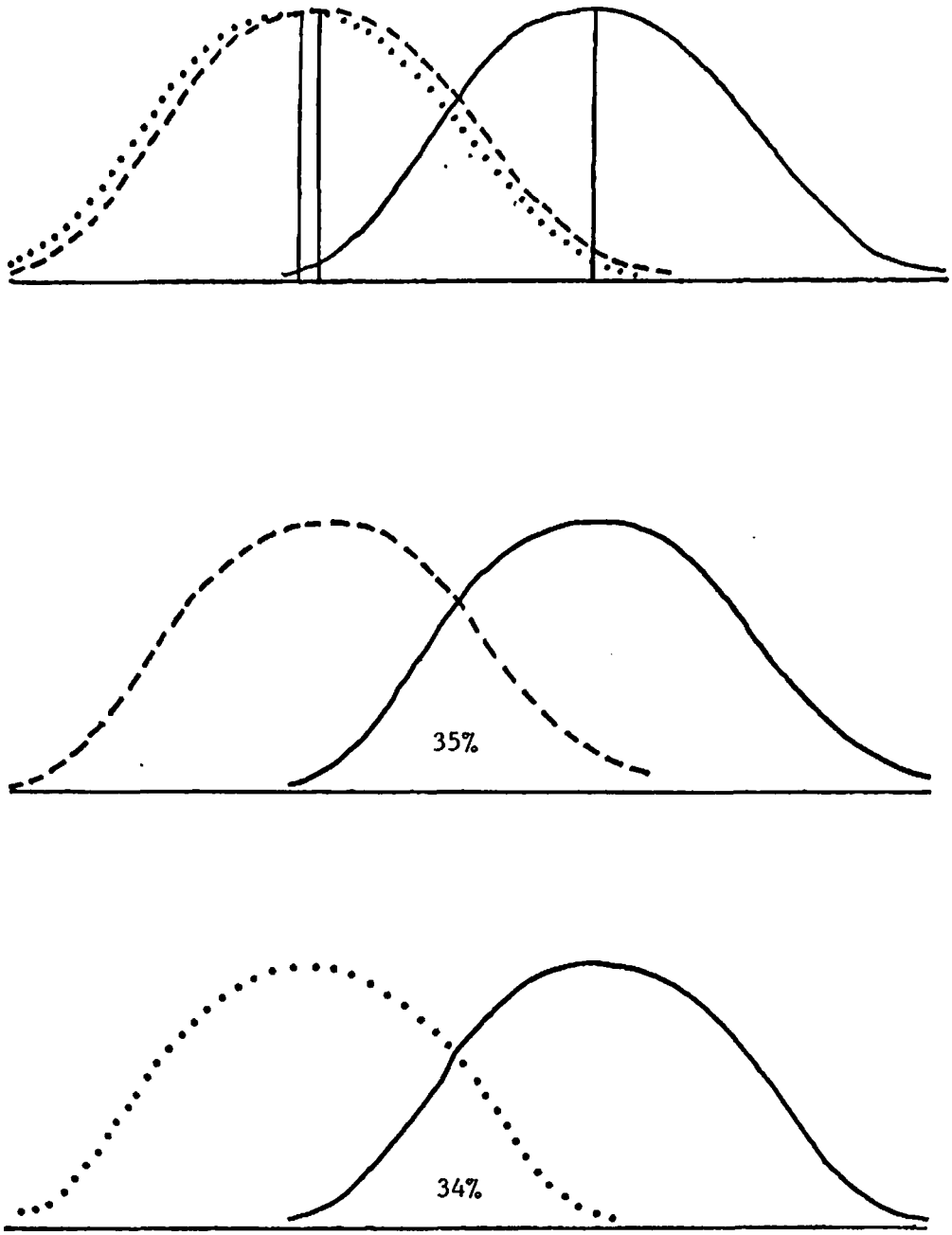
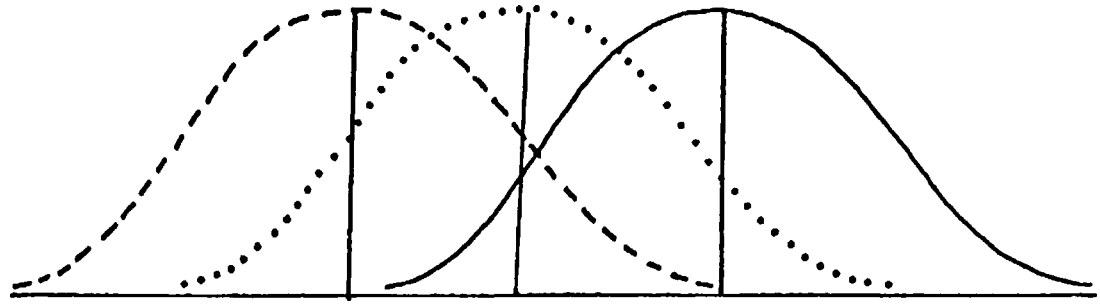
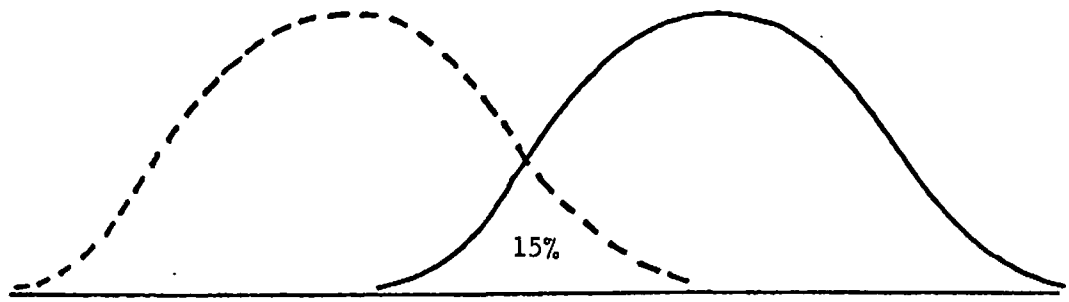


FIGURE 11

PERCENTAGES OF OVERLAP FOR NUMBER OF TYPES OF SETTINGS ENTERED





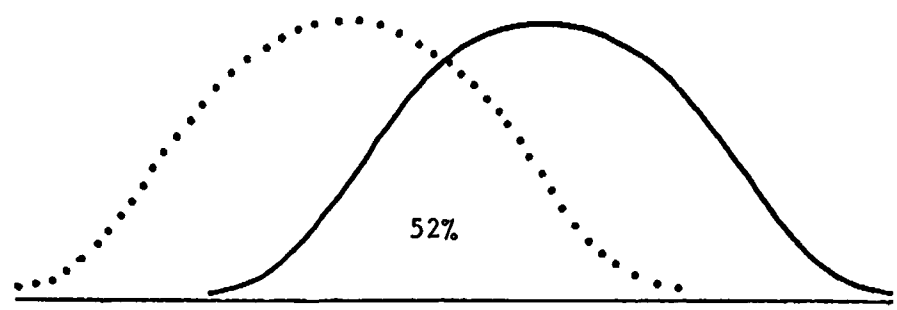


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FIGURE 12

PERCENTAGES OF OVERLAP FOR NUMBER OF ENTRANCES

INTO SETTINGS OUTSIDE RESIDENCE

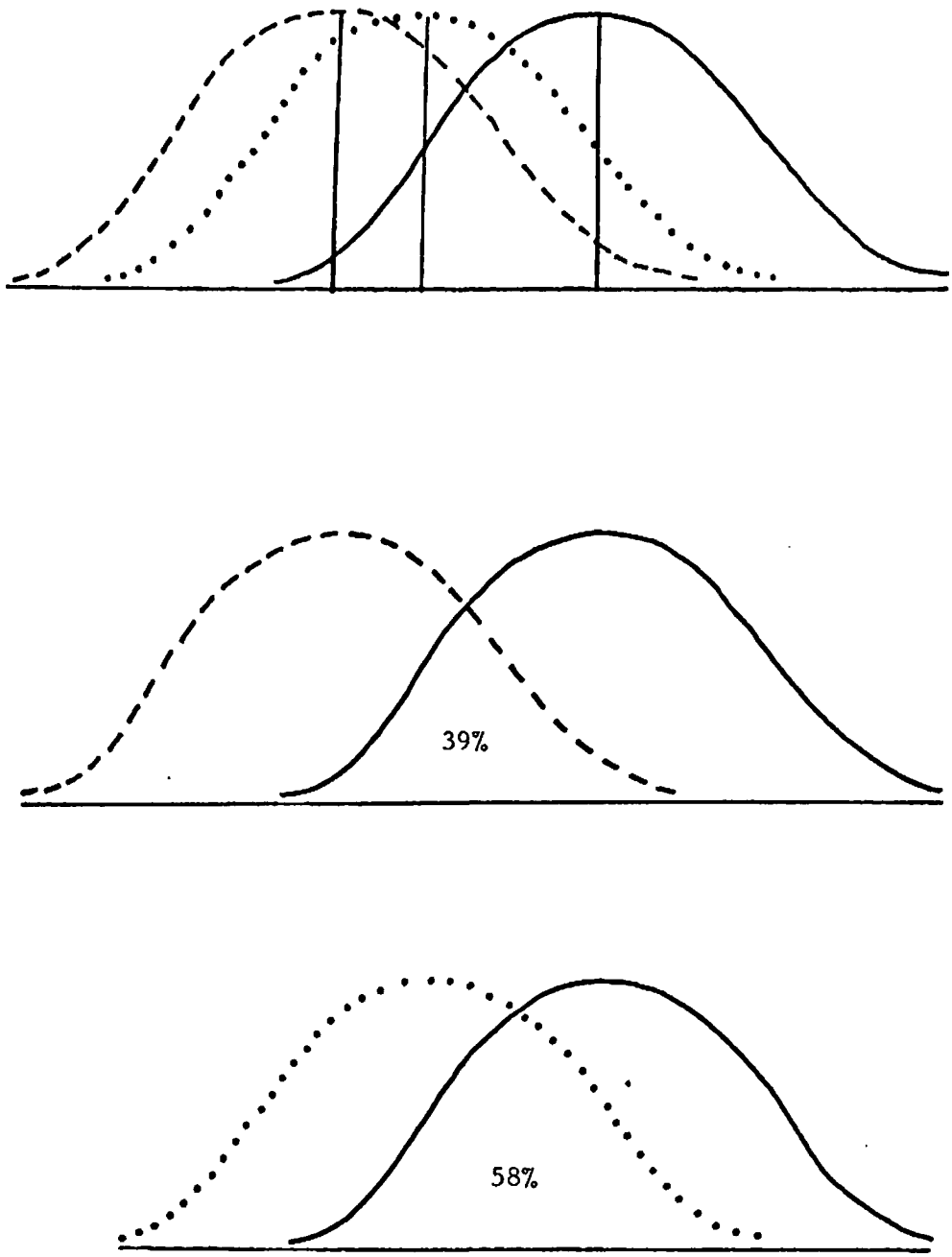

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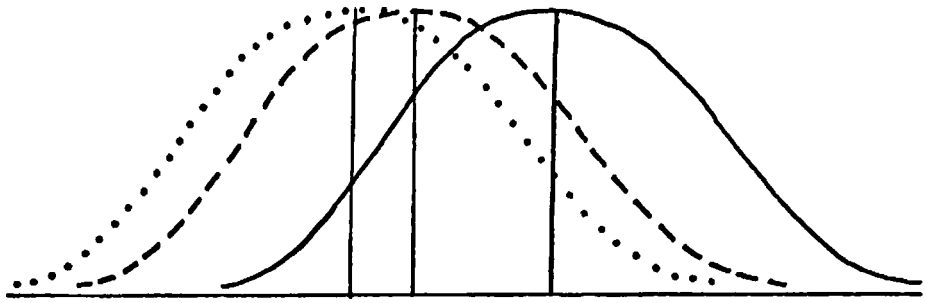
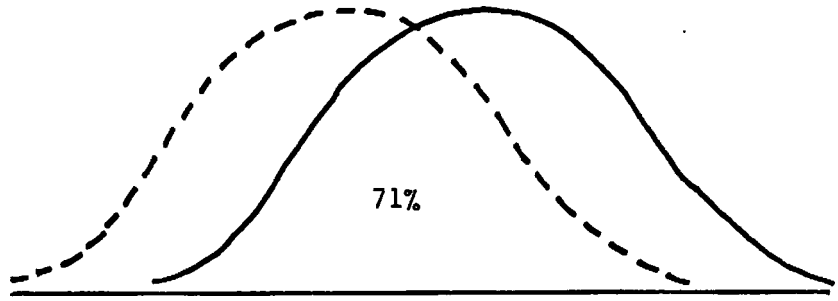
FIGURE 13

PERCENTAGES OF OVERLAP FOR NUMBER OF

VOCATIONAL-EDUCATIONAL ACTIVITIES





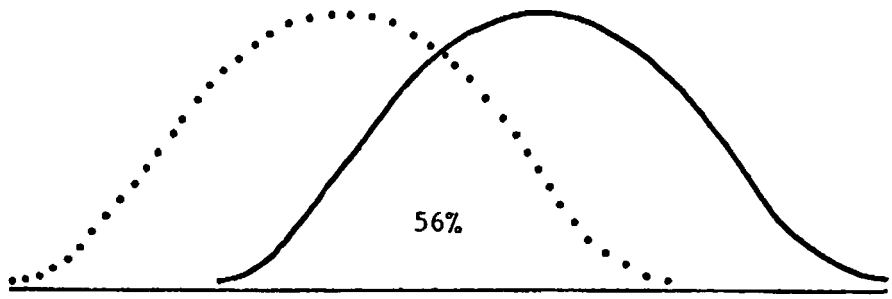


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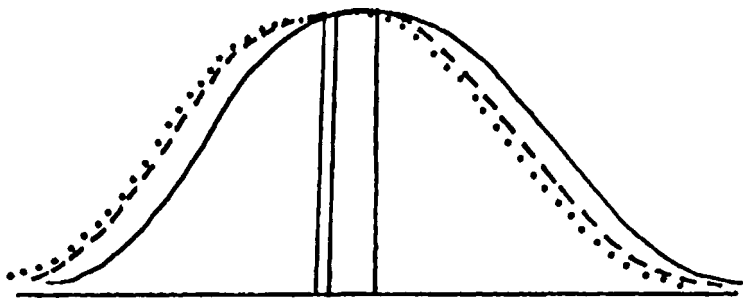
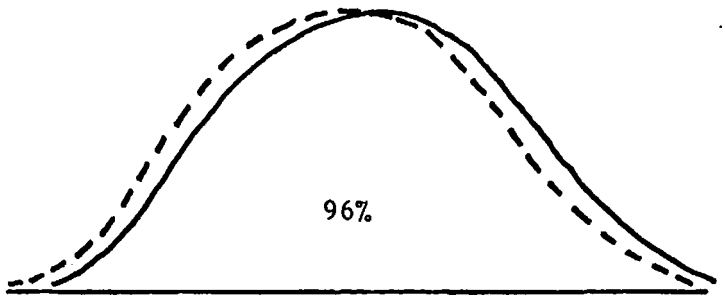
FIGURE 14

PERCENTAGES OF OVERLAP FOR NUMBER OF

SOCIAL-RECREATIONAL ACTIVITIES





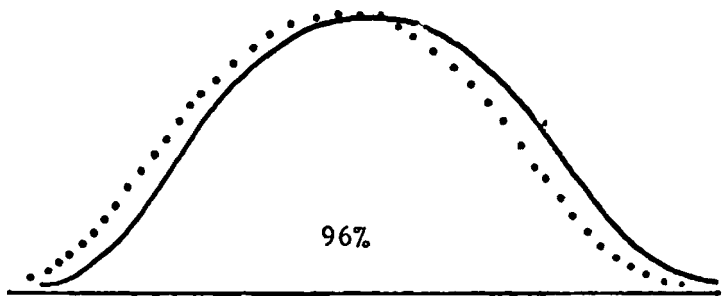


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FIGURE 15

PERCENTAGES OF OVERLAP FOR NUMBER OF

BUSINESS-COMMERCIAL ACTIVITIES

CHAPTER V

DISCUSSION

The purpose of this study was to explore several relatively broad questions about the relation between residential setting and daily life activities of spinal cord injured young adults; especially, to compare living patterns in a new residential setting (the TIRR residence), one designed to have a positive impact, with previously available alternatives: home and nursing homes.

The first question to be answered was whether differences in nature and scope of daily behavior existed between the TIRR residence group and the home-nursing home group. Significant differences were found on two variables related to contact with persons. The TIRR group interacted with more persons other than family members or attendants and with more different persons than did the home-nursing home group. Thus, the TIRR group showed a greater diversity in social contact, a wider scope or range of persons interacted with. There were no significant differences between the two groups on the majority of measures.

The highly selected nature of both groups should be considered here. An implicit criterion for admission to the TIRR residence is academic-vocational promise, based primarily on knowledge of past performance. Thus, the TIRR residents comprised, from the beginning, a special group, and, in this study, were matched with individuals having similar characteristics. The two disabled groups were therefore composed of people who were already "doing well" in life; such composition leaves little room for differences of a magnitude sufficient to emerge in statistical analyses. Further, it

may well be that "highly motivated," success-oriented persons are more likely to succeed in a variety of settings, that settings make more difference for less "self-starting" persons. Such factors would account for the lack of significant differences between the two groups.

The other questions to be answered were evaluative ones, concerned with how well the TIRR residence fulfilled its goals and how closely it approximated a "norm" in comparison with other residential alternatives. As described previously, the major goals of the residence included reducing psychosocial isolation, enhancing vocational-educational development, promoting self-sufficiency, and providing opportunities for physical mobility. The "norm" is represented by a non-disabled group.

The TIRR residence does in fact reduce psychosocial isolation, the residents having significantly more interactions with a wider range of persons than those in the home-nursing home group, even though rates of interaction did not differ appreciably. Thus there was more repetition in the person contacts of the home-nursing home subjects, with the TIRR residents interacting with more different persons. The TIRR residence group more closely approximated the norm in regard to number of different persons interacted with while the home-nursing home group approximated the norm more closely in number of varieties of persons interacted with. The TIRR subjects consistently scored higher on person contacts than the home-nursing home subjects, with the non-disabled falling in between, and the proximity of the disabled groups to the non-disabled group varying. The TIRR group was also closer to the non-disabled group in social-recreational activities, which, by definition, implies the involvement of others.

In regard to vocational-educational activities, the TIRR residence

appears to fall short. There was no significant difference between the two disabled groups in vocational-educational activities and the home-nursing home group more closely approximated the norm. However, the data do not provide a basis for a conclusion about the effects of the TIRR residence on vocational-educational activity, since four TIRR residents who were not employed or in school were nevertheless matched with controls who were either employed or in school. There were no significant differences between the two disabled groups in spite of lack of vocational-educational involvement of one-third of the TIRR group at the time of the study. Such a disparity in matching leads to the speculation that the TIRR group might have exceeded the home-nursing home group had the matching on this important criterion been more precise. Further, three of the four TIRR residents resumed work or college classes within two months after the diary-keeping period.

On geographic or physical mobility, i.e., variables related to locations or settings entered, both disabled groups fell below the non-disabled group. Such results are to be expected; it would seem logical that a main effect of severe physical disability would be to decrease the rate and scope of mobility. The two disabled groups did approximate the norm somewhat differently in some aspects, the TIRR group being closer in regard to number of different settings entered, a heterogeneity measure. Thus the TIRR residence has not counteracted some of the limiting aspects of physical disability more than other residential alternatives have. Again, a word of caution in interpreting these results: three of the TIRR residents were quadriplegic and were matched with paraplegics. While all disabled subjects were non-ambulatory and relied exclusively on wheelchairs, level

of disability does affect ease of physical mobility (e.g., dealing with architectural barriers), and the TIRR subjects' scores on settings variables may have been decreased in relation to those of the home-nursing home subjects because of unfavorable matching.

One particularly interesting set of results was obtained in regard to business-commercial activities. The absence of any significant differences among the groups on this variable is a provocative finding, since making necessary transactions for goods or services is a basic aspect of independent functioning in society. Concluding that physical disability does not affect carrying out such activities on the basis of these results is not entirely warranted however, since the variable of number of business-commercial activities had the fewest occurrences. Relative to the other variables investigated, occurrences of business-commercial activities were rare in all three groups. Therefore, investigation of the distribution of such activities over a longer period of time is needed before a definitive judgement can be made.

In conclusion, it cannot be said that the TIRR residence group consistently showed "better" or more "normative" behaviors than did the home-nursing home group on all aspects of daily life considered in this study. The daily lives of the residents did tend to show more variety and scope, more diversity and complexity, and more social involvement than did the daily lives of their counterparts living at home or in nursing homes. Since matching of subjects was employed in the design of this study, the presence of significant differences and trends is highly indicative or real differences in daily experiences among the groups.

The categories or variables investigated here may have been too broad

and general to pick up other differences which might be evident on a more molecular level. Such information, as well as that about possible differences in psychological responses, was not sought here. However, in order to estimate what nature of data a subjective study might yield, informal, unstructured interviews were carried out by the investigator three months after the diary-keeping period. The TIRR residents who had participated in the study were asked to describe what differences, if any, living in the TIRR residence has made in their daily lives. Four of the twelve residents were unavailable for interviews, one having moved from the residence, the other three having left on two-month summer vacations.

All of the residents interviewed felt that the residence had freed them from custodial or parental care, from institutional rules and schedules or from being a "burden" on parents. They frequently pointed out that it was much easier to schedule and keep appointments and get to school or work since transportation was readily available and they did not have to depend or impose upon friends or relatives. Social contact was also reported to be easier; the residents said they met more people and felt freer about having friends visit than in their previous locations. Another positive aspect often cited was the architectural accessibility (e.g., accessibility of bathrooms, height of light switches) of the building which made daily activities easier. Not all residents were positive about the residence, some having become rather disenchanted due to changes in the residence as a function of funding difficulties, others feeling that they had profited as much as they could from the experience and were now ready to "move on."

Interviewing did elicit a different type and level of information; the residents described advantages of living in the residence which were of a

comfort-discomfort or emotional nature and also some smaller details of everyday life. For example, one resident reported feeling "more my own boss" while another said that he was able to get a cup of water by himself now because of specially designed faucet equipment. While some of the information elicited did support the categories investigated here (e.g., increased social contact), there remain other reported differences which did not enter into the analysis of the data. Such differences may be difficult to find in behavioral data, being either non-existant, as a function of the frequent discrepancy between what people say and what people do, or reflecting somethind difficult to measure, such as "atmosphere" or "feeling of freedom."

This study is one which focuses on the configuration of the molar events of daily life. It is designed to reveal quantitatively the nature and variety of living patterns that characterize persons in particular settings. It may be that the differences described in the interviews would become apparent if information about the more molecular activities of daily life were obtained. In any event, a complete, comprehensive evaluation would require focusing on more molecular events and the content, both subjective and objective, of daily life. Further investigation would also involve exploring such aspects as the processes and techniques involved in implementing the residence program, and study carried out over a longer period of time or at different intervals.

The results of this investigation do, however, provide some idea of where those involved in the residence program might efficiently direct their efforts. The residence is effectively counteracting social isolation, the residents having as much or more contact with people as those who are

not physically disabled and more than those who are disabled but live elsewhere. The problem of geographic mobility is less effectively met, however, even though the TIRR residence group did not differ appreciably from the other disabled group. Determining the kind of settings the physically disabled enter less than the non-disabled, the characteristics of such settings as well as of those they enter at an equal rate, would provide a basis for making decisions about improving geographic or physical mobility.

A final word of caution should be offered. The study presented here has not really compared the effects of living situations for the severely physically disabled in general; rather it has compared the effects of living situations for a special sample of severely physically disabled. The subjects of this investigation were all white and predominately middle-class males in their twenties, with education or training beyond the high school level. As a group, whether they resided in the TIRR residence or at home or in nursing homes, they were not representative of the general population of spinal cord injured persons. The task of separating effects of environment from effects of individual differences is a difficult one at best, one which has been further complicated here by the high degree of selection of the TIRR residents. While matching the subjects has lessened the generalizability of the results and also decreased the chances for significant differences, it was felt that this approach would be the most useful for separating the effects of "place" from the effects of "person." Thus, we have tried to examine the effects of different places on similar persons. Even given the limitations described here and previously, it is evident that different residential environments for the severely physically disabled do have a significant impact on their daily functioning

in certain areas, and that a specialized residential environment, such as the TIRR residence, can make that impact a positive one.

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APPENDICES

APPENDIX A

INTRODUCTORY LETTER TO TIRR RESIDENTS

TEXAS INSTITUTE FOR REHABILITATION AND RESEARCH
IN THE
TEXAS MEDICAL CENTER
1333 MOURSUND AVENUE
HOUSTON, TEXAS 77025

P. O. BOX 20096

TELEPHONE
JACKSON 6 4281

February 21, 1973

Dear

As you know, our grant requirements stipulate that various research projects be undertaken in regard to the Annex program. I am writing to introduce you to and ask your help and cooperation in one such study which will be conducted soon. Your part in the study would involve recording you daily activities each evening for a period of one week.

To carry out this study, Miss Judy Kirksey will visit you and the other Annex residents. Before making the visit, Miss Kirksey will call to arrange an appointment with you. Miss Kirksey is currently working with Drs. Vinebera and Willems of the TIRR staff. All information you give in the study will be kept completely confidential. To further assure anonymity, a code number will be assigned to you.

We sincerely hope that you will find it possible to participate in this important study. If you have any questions, please do not hesitate to call Dr. Vinebera's office, [redacted], Extension [redacted].

Sincerely,

[redacted]

David Stock

APPENDIX B

INTRODUCTORY LETTER TO TIRR EX-PATIENTS

TEXAS INSTITUTE FOR REHABILITATION AND RESEARCH
IN THE
TEXAS MEDICAL CENTER
1333 MOURSUND AVENUE
HOUSTON, TEXAS 77025

P. O. BOX 20096

TELEPHONE
JACKSON 8 4281

Dear

TIRR continues to be interested in learning whatever it can in order to improve the rehabilitation process. Occasionally, we call upon our former patients to assist us in this task, and their excellent help and cooperation have been very useful.

At present, much knowledge has been gathered about the patient while in the hospital. Much less, however, is known about what happens to the patient after leaving the hospital. We would like to ask your cooperation in one such study which is now being conducted. From a large number of former TIRR patients, you and 29 others have been carefully selected on the basis of such characteristics as age, time of onset and level of disability, place of residence, and so on. Since the selection process was a careful one, your participation and help is quite important, and your contribution would be very valuable.

Your part in the study would involve recording your daily activities each evening for a period of one week. All information you give will be kept completely confidential. To further assure anonymity, a code number will be assigned to you.

To collect this information, Miss Judy Kirksey will visit you and the other former patients. Before making the visit, Miss Kirksey will call to arrange an appointment with you. Miss Kirksey is currently working with Drs. Vineberg and Willems of the TIRR staff.

We sincerely hope that you will find it possible to participate in this important study. If you have any questions, please do not hesitate to call Dr. Vineberg's office, [redacted], Extension [redacted].

Sincerely,

[redacted]

R. Edward Carter, M.D.
Director, Patient Care Services

APPENDIX C

INSTRUCTIONS AND DIARY SHEETS

INSTRUCTIONS

The following pages are your daily diary sheets. As you know, you have been asked to record your day's activities each evening before you go to sleep, over a period of one week. There are extra sheets included in case you need them. You may use as many sheets as you need for each day; one sheet may not be enough for one day.

The two pages immediately following this one have been filled out, as a sample daily record to give you an idea of how to go about your recording, and here are some written guidelines you can refer to.

1. Date: The day's date.

2. Code: You have been assigned a code number which will already have been entered when you get the sheets. This is to assure confidentiality.

3. Time: The approximate time for an activity; the time during which it occurred. For example, on the sample page, 8:00-8:30 for eating breakfast.

4. Activity: Here you should list all the different things you did throughout the day, trying to remember as many as possible. It would be good if you would be as detailed as you can. Having you list everything you did during the day would be too much to ask, (for example, listing each time you light a cigarette or have a drink of water), but if you have the stamina and memory for it, please feel free. Sometimes you may be doing two things which overlap with each other as far as time goes. For example, on the sample the person was studying from 2:30 to 4:30 and talking on the phone from 3:00 to 3:15. There are two separate entries for these activities, even though the times overlapped. When it does happen that you are doing two things at once, or times overlap, go ahead and make two different entries. Most importantly, please be as accurate as possible.

5. Location: In this space you should write where the activity took place. For those locations away from your place of residence, please give an approximate address. If the activity takes place at a reasonably well-known, public location, the name will be sufficient. For example, on the sample, Sharpstown Shopping Center and Hermann Professional Building. (If you should go out of town on one of the days you are to fill out your diary sheets, giving addresses in other towns is not necessary. General names like "aunt's house," "theater," or "grocery store" will be sufficient.

6. Others Involved: Here you are to list those who are directly involved in the activity with you; that is, the primary people you interacted with during the activity, whoever accompanied you on the activity. Please list the person's relationship to you (as on

the sample - friend, mother, etc.) or the general classification of the person (as on the sample - dentist, salesperson). If some classification is to be listed more than once (like friend on the sample) it would be helpful if you put their first name also, since without the first names it wouldn't be clear that 2 different friends were involved (Paul and Sue) in some of the activities or that one friend was involved in 2 different activities. Also give the approximate number of people you interacted with if there were several in one classification. For example, on the sample, "2 friends" and "3 salespersons."

If you have any questions about this at any time, pleas don't hesitate to call me, even if you feel the questions are unimportant. I can be reached at [redacted], Extension [redacted] (TIRR) or [redacted] (home). Your help is greatly appreciated.

Thank you.

Judy Kirksey

DIARY SHEET

Date: 1-12-73 Code: 06

Time	Activity	Location	Others Involved
:15-8:00	Woke, washed, dressed	home	father
00-8:30	Ate breakfast	"	father, mother
30-9:00	Read newspaper	"	—
00-10:30	Watched tv	"	—
30-12:00	Went to dentist	Hermann Professional Building	dentist, brother
:00-12:30	Ate lunch	home	mother, brother
:30-12:45	Talked to friend on phone	"	friend - Sue
:45-2:30	Went shopping	Sharpstown Shopping Center	friend - Paul
2:-4:3:	Studied	home	—

DIARY SHEET

Date: 1-12-73

Code: 06

Time	Activity	Location	Others Involved
:00 - 3:15	Talked to friend on phone	home	Paul
:30 - 5:30	Watched TV	"	father
30 - 6:00	Talked to brother	"	brother
:00 - 6:30	Ate dinner	"	father, mother, brother
30 - 7:00	Watched TV	"	—
:00 - 9:15	Went to movie	Loew's Downtown	Sue + 2 other friends
15 - 11:30	Visited at friend's house	1820 Davis	Sue + same 2 friends, plus 2 more friends
:30 - 12:00	Got ready for bed	home	father
2:00	went to sleep	"	—

DIARY SHEET

Date: _____ Code: _____

Time	Activity	Location	Others Involved