SOCIAL CONTACT IN A REHABILITATION HOSPITAL:

ANALYSIS OF OBSERVATIONAL DATA

A Thesis

Presented to

The Faculty of the Department of Psychology

University of Houston

In Partial Fulfillment

of the Requirements for the Degree

Masters of Arts

By

Richard H. Lucas

December, 1974

SOCIAL CONTACT IN A REHABILITATION HOSPITAL:
ANALYSIS OF OBSERVATIONAL DATA

An Abstract of a Thesis

Presented to

The Faculty of the Department of Psychology

University of Houston

In partial Fulfillment

of the Requirements for the Degree

Master of Arts

---

by

Richard H. Lucas

December, 1974

ABSTRACT

Naturalistic observation of spinal cord patients at Texas Institute for Rehabilitation and Research in Houston, Texas,has generated a great deal of information about the behavior of these patients. This information is contained in patient protocols, which are continuous narratives of the behavioral stream of twenty-seven patients observed for one full day in 1968 and 1971. Included in the protocols are data on patients' social contact with staff and other persons in the hospital. In the present study, the narratives were examined for instances of socializing behavior. This procedure yielded a new set of data: a topological description of social contact throughout the hospital by patients, staff, and behavior settings. The amount and initiation of social contact for patients was correlated with different settings, patient age, time spent in hospital, and length of time since spinal lesion. There are analyses of the amount and initiation of social contact with staff and other persons. This study's topographical description depicts the pattern of social contact throughout a patient's day and compares changes over the three year period when patients were observed. Correlational analysis showed some trends that: patients earlier in treatment converse more than later

patients; patients increase social contact the longer

they have had their spinal lesions; staff initiate

social contact more to patients who have been in the

hospital longer; and patients initiate more social

contact to non-staff persons than to staff.

This study discusses the merits of certain types

of observational research for the study of socializing

behavior and suggests that the observations or

encoding procedures at Texas Institute for Rehabilitation

and Research be changed to yield more specific data on

this behavior.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Despite the etymology of the word "psychology", and its historical origins, psychological research today is very concerned with overt, observable behavior. The approach is simple: if you want to learn about people, then look at what people do. When the paleontologist wants to find out about the past, he goes where there is evidence of the past and systematically describes what he finds. Of course, he or his colleagues may then perform many tests on his discovered materials back home in a laboratory. Likewise there has been a long standing tradition in psychology of the difference between "laboratory" and "field" research. Recently there has been a growth in the latter approach which has been termed "naturalistic" (c.f. Willems and Raush, 1969). Through methods of direct observation of behavior as it occurs naturally in a person's environment, a view of human behavior can emerge which relates that behavior to other naturally occurring objects or events in the environment.

But for the psychologist, as well as the paleontologist, what he observes depends on what he is looking for, and this in turn helps shape the methods or techniques of observation he chooses. Generally, an observational method can be defined as "the selection, provocation, recording, and encoding of that set of behaviors and settings concerning organisms 'in situ' which is consistent with empirical aims" (Weick, 1968, p. 360).

Depending on the "set of behaviors" and the "empirical aims" --
that is, the degree to which one conceptualizes what he is
observing -- two types of observational methods have been
distinguished. Byrne (1964, pp. 56-57) calls them inductive
and deductive; Straus (1964, p. 341) describes them as empirical
and rational. In the empirical approach, an arena of be-
haviors is selected without any conceptual definitions of the
phenomena until a stable pattern emerges. In the rational
(or deductive) approach, a conceptualization of the phenomena
guides the selection and recording of the observations. A
problem with the first approach is that often one finds him-
self with a lot of data, but with little to guide his organ-
ization of them. In the second, there is a tendency to accept
the original conceptualization even after data emerges which
might require re-conceptualization.

Despite which orientation is used, four ways of collecting
the data can be used. One is to get as complete a description
of everything as possible (e.g. videotape); another is to
define broadly what one will describe (e.g. observers describe
all overt behavior of a target person); a third is describing
only one set of certain behaviors (e.g. recording antecedents,
occurrence, and consequences of different kinds of attending
or studying activity of a student); and the fourth is the
simple recording of one target behavior. In a way these four
are presented in decreasing complexity. But the result of all
is some kind of record of the observations -- a videotape, a

narrative, a coding pattern, a check list, etc. What is in the record depends, quite obviously, on which method was used.

An example of the second way of collecting data, using observers who describe behavior, is the work of Roger Barker and H. F. Wright. Wright defines the resultant record of a continuous narrative of an observer as "a sequential, un-selective, plain, narrative description of behavior with some of its conditions" (Wright, 1960, p. 86). It is called a "specimen record" and includes the behavior of a person and some of the surroundings. Since there is no hypothesis about what will or should happen, the data are called "'theoretically neutral'" (Barker, Wright, Barker, and Schoggen, 1961) and "deliberately unselective" (Wright, 1960). The assumption is that once the data are collected, the behavior can be related to other naturally occurring events in the environment (Ferster, 1973).

What is apparent in any method of naturalistic observation is that choices are always being made about what to look for. The problems and processes of encoding the data may occur at different points for the videotape play back and the observers with a check list "in situ", but both have to make choices as to what to do with the data. Clarifying where these choice points are and what happens when they are made is a step in the direction of refining the techniques.

In this present study, an analysis of the encoding process

of direct observational data is made with respect to a certain set of behaviors. That set of behaviors chosen is socializing verbalizations or linguistic behavior contained in the specimen records of hospitalized patients.

BACKGROUND AND STATEMENT OF PURPOSE

Shalom E. Vineberg, Edwin P. Willems, and William F. LeCompte have carried out an extensive program of direct observation of patients hospitalized in the Texas Institute for Rehabilitation and Research (LeCompte, 1972; Vineberg and Willems, 1971; Willems, 1972; Willems and Vineberg, 1969; Willems and Vineberg, 1970). In the summers of 1968 and 1971, they observed 27 patients with high spinal cord lesions who were involved in a comprehensive program of rehabilitation. They chose direct observational methods because, according to them, rehabilitation research in the past was conducted by "crude, hit-or-miss observations, retrospective summaries, interviews, anecdotes, and a host of beliefs, assumptions, and pet ideas" (Willems and Vineberg, 1970, p. 1). They asked such questions as: What do patients do? How can their behavior be characterized in terms of surface quality, events, structure, pace, dynamics? What is the amount of time staff spend directly involved with patients? How does behavior change as patients move into different behavior settings within the hospital?

Their methods are described in detail elsewhere (Willems

and Vineberg, 1969, 1970). Briefly, a trained observer dictated into a tape recorder continuous descriptions of a patient's behavior. Covering a full, 18-hour day for each patient, a team of three observers rotated, each describing for two hours, with ten minute overlapping for reliability checks. The observers described as accurately as possible in common (or "layman") language all that the patient did or had done to him, and the environmental context. Each passing minute of clock time was also noted. These taped records were then transcribed, proofread by the original observer using the tape as reference, and edited for good grammar and style. The resultant protocol was then coded by two independent coders into two general classifications of behavior -- chunks or principal activity (e.g. combing hair, conversing) and bits which are shorter, fleeting behaviors performed by or to the patient (e.g. an orderly gives a glass of water, the patient waves to a nurse). Furthermore, the protocols were coded for where, how long, with whom, and on whose instigation each behavioral event occurred. (Instigation was not coded for bits). The investigators have reported interobserver and intercoder reliability in the 80%-88% range for principal activities (Willems, 1973).

The authors claim that the "protocols are very rich sources of data, amenable to analysis for many different purposes" (Vineberg and Willems, 1971, p. 9). Their own analyses are partially contained in the cited references. They have plotted

the rate of patients' behavior in different settings, the rate

of staff involvement with patients, measures of patients'

independence, differences in patients' behavior early and

later in the treatment program, and a variety of other measures

to describe the ongoing stream of behavior of patients as well

as the health care delivery system of the hospital.

The observations purport to be much more than a purely

descriptive topography of behavior, since the focus was

explicitly ecological. Behavior was viewed "in relation to

the habitat, the environmental context" (Willems and Vineberg,

1969, p. 74). More specifically, these authors claim to have

approached such questions as: "What are the temporal, sequential

contingencies in patient behavior -- what follows what, what

precedes what, and what are the contingent probabilities" that

will "point to the direct interface between the behavior of

patients and the many arrangements that proliferate around

the delivery of health care?" (Willems and Vineberg, 1970,

p. 2). They assume that the protocol "captures and describes

the ongoing experience-behavior stream of a patient...."

(Willems and Vineberg, 1969, p. 75). The goal of the observation

was to describe behavior and "enough of the context to make it

intelligible" (Willems and Vineberg, 1970, p. 4, underscore

added). The key to this intelligibility is the "idea of an

interface -- a set of ongoing, patterned connections -- between

the patient's behavior stream and the hospital's delivery

system...." (Willems, 1970, p. 2). Two purposes of their

research emerge: (1) a topographical description of behavior and (2) a context to make that behavior intelligible.

Any time a psychologist claims to make human behavior intelligible he invites both attention and critique. Environmental context, interface, ongoing experience, sequential contingencies, contingent probabilities -- these are claims that could provoke cynicism. After all, a "neutral" description of a "layman" certainly flies in the face of a history of experimental psychology that demands laboratory controls and carefully designed tests. A second reaction, the one taken here, is the actual testing of their claims and data. The test is whether or not the data provide a coherent and unambiguous picture of the verbal, social interactions of patients and, if so, what are the limitations of the data? Is it possible to use the patient protocols to ferret out what patients do or what is done to them that is not directly linked to treatment delivery -- that is, patients' experience of social contacts with environmental agents? If the data constitute a continuous stream of behavior, then can the social pattern(s) of patients' experience be plotted vis-a-vis staff, other patients, and behavior settings; or correlated with measures of progress? How does the data-reduction process used by the previous investigators affect this set of behaviors? In short, can the data be translated, classified, or manipulated to catch the quantity, flavor, quality, or import of patients' verbal, social experience within the hospital?

CHAPTER II

METHOD

Definition of "Social Contact"

Social Contact (SC) is defined generally as any interaction a patient has that is not oriented to his treatment. Practically or operationally, the patient protocols contain two major codes that can be included in this definition -- chunks coded as "Conversation" and bits coded as "Social bits". An example of a conversation is a patient and nurse talking about a television program; examples of social bits are a patient and orderly exchanging greetings, or a patient waving "hello" to another patient. Conversation presents a particular conceptual problem because observations did not always include the content or purpose of the conversation. If it was observed that a patient and physical therapist were talking, the therapist could have been explaining an exercise. However, if the observer did not make this clear and if talking seemed to be the principal activity between the two participants, then this talking was coded as conversation. If the conversation was detailed enough to be coded "Conversing about treatment" or "Explaining use of orthotic device" for example, then it would not be considered SC for purposes of this study. If, during an ongoing treatment, short social interactions occurred, these would have been coded as social bits in the original protocols.

Collection of the Data

The patient protocols had been coded by the researchers at

Texas Institute for Rehabilitation and Research. In the margins of the narrative for each principal patient behavior or chunk were the codes: type of behavior, length of time, others directly involved and their function in the hospital (e.g., nurse, OT, doctor, visitor, other patient), who instigated the activity, degree of patient involvement, and number of residual persons in the immediate vicinity. Short, fleeting behaviors or bits were also coded as they occurred in the narrative and included only others directly involved in the bit. Two kinds of bits had been coded: those directed toward patient care, and those of an overt, social nature, or social bits. The present author went to these coded protocols and recorded every instance of a chunk labeled as "Conversation" including where it occurred (i.e., behavior setting), with whom, length of time, and who initiated it. Also, every occurrence of a social bit and who was directly involved was recorded. The previously coded protocols did not include who instigated social bits or explicitly where social bits occurred. This author added to the existing codes the code of who initiated the social bit. (Reliability checks on this coding were not made). Where the social bits occurred was also coded and recorded by the present investigator. This judgement was generally trivial because social bits, as previously coded, were situated in the margin of the protocol next to principal activities which had been coded for setting. For both conversation and social bits, when staff members were the other persons directly involved with the patient, their function or position (i.e.,

nurse, aide, orderly, and so forth) was recorded; these are
called "staff levels" for use in this present study. When
a conversation or social bit occurred with nonstaff persons
(principally other patients and visitors), it was listed as
occurring with "others".

Topography of SC: Staff, Settings, Patients, Initiation

One of the questions pursued in the observational research
was the number of behaviors and amount of time for which staff
members were directly involved with patients. This same ques-
tion is applied to SC by recording each staff level's rate of
involvement in SC with patients. In 1968, there were about 20
staff levels used in the coding. However, in 1971, the research
team at Texas Institute for Rehabilitation and Research had
subdivided some of the levels in their coding. (For example,
the category of nurse was broken down into LVN, student nurse,
RN, and so forth). To make possible comparisons between the
two years, these subcategories were collapsed back into the
original 1968 classifications by the present author. Occasion-
ally, observations do not identify the staff member; these
observations were generally not used here. They accounted for
only 1.4% of the total staff-patient SC in 1968 and 3.6% in
1971 (see Tables 1 and 2 below). Aides and orderlies were
classified in one category because their functions changed
between the two years due to the hospital's re-assignment of
jobs.

When we focus on the staff, we can ask how many patients

each staff level contacts. This is called the "patient range" of the staff. Conversely, the number of staff levels with whom each patient had SC is called the "staff range" of the patient. (Because the patients were the targets and there were 12 in one year and 15 in the other, there is a built-in ceiling for the patient range; but this is not true for the patient's staff range because there are so many different hospital staff positions). "Behavior settings" are the locations in the hospital where the SC occurred. Besides the actual frequency counts of how many SC occurred within each setting, both individual patients and staff levels are assigned a "setting range" -- i.e. the number of different settings in which they engaged in SC. Thus, a very complete landscape description of SC in terms of persons and places is possible.

The initiator of SC is that person who instigates the contact. Quite frequently, these were coded as "cannot be inferred" in the protocols because of the nature of the observation. For instance, "Smith and Jones are talking" would be given this code; but "OT Smith walks up to Jones and greets him" is coded as staff initiation. All of the above should offer an overall description of SC within the hospital on the dimensions available in the protocols: occurrence of SC, with whom, where, and initiation.

The Context of Social Contact

Because both individual patients and different settings have differing numbers of behavioral events, some way had to be

devised to arrive at a rate measure of SC with respect to other kinds of activity. Two measures were invented for this purpose: General Activity, which is all behavioral chunks except conversation, and Treatment, which is all General Activity minus those behaviors not directly treatment orient- ed.[1] The tabulation of these measures was greatly facili- tated by computer print-outs of all behavior chunks. Dividing SC by either of these two measures gives the rate of an indi- vidual patient's SC in relation to his other behaviors in general or within specific settings.

The investigators cited have taken an interest in how behavior early in treatment differs from behavior later in treatment. It is expected that patients who are further along in their treatment regime will be more active and initiate more behaviors, and this indeed is what was found in their analyses. In the present study, two measures of early and late patients were used to compare this measure of progress with SC: Actual Time (number of days spent in hospital to date of observation) and Percent of Admission (Actual Time divided by patient's total stay). Patients were ranked on these measures and correlated with frequency of SC, offering a look at whether or not SC changes as a function of time spent in hospital or progress in treatment. Likewise, two measures were used to

---

[1]These are: Telephoning, Active Recreational Activity, Horseplay, Passive Recreation, Leisure, Idle Movement, Idle, Sleep, Meal, Snack, Transport (to other than treatment), Get- ting Things, Manipulating Immediate Environment, and Miscellaneous.

correlate SC with length of time since onset: Actual Time since
the lesion and Percent of Life, which is Actual Time divided by
patient's age. A third variable considered is age of patient:
patients' ages were ranked and correlated with SC, with younger
patients ranked higher so that positive correlations would in-
dicate SC is more prevalent in younger patients.

Finally, using the actual numbers of initiated SC and the
percent of initiation, patient and staff initiation was corre-
lated with early-late, length of stay in hospital, length of
disability, and age. This should indicate whether or not staff
or patients initiate SC differentially. Also, patients were
ranked according to initiation to staff and to others to see if
patients initiate more to one group than another. Conversely,
staff and others' initiation was compared to see whether staff
or others are more initiating toward patients. It must be empha-
sized that all of the above measures are what the observa-
tional data make available for analysis.

SUBJECTS

The subjects were 27 patients with high spinal cord lesions.
Twelve were observed in 1968 and fifteen in 1971. They were giv-
en code numbers of #01 to #12 and #13 to #27. There were five
women and twenty-two men, ranging in ages from 16 to 72. In
1968, eight were diagnosed as quadriplegics and four as para-
plegics; in 1971, there were twelve quadriplegics and three para-
plegics. These were the subjects used in the observational
study. The data used for this present study are the final
specimen records from those observations.

CHAPTER III

RESULTS

The results are presented here according to the two major areas of concern: The topography and the context of SC. Under topography of SC are included data on: (1) staff's rate of involvement in SC, patient range, and setting range; (2) numbers of SC within settings and patients' setting range; (3) the patients' involvement in SC with staff and with others; and (4) initiation of SC. Under the context of SC are included: (1) comparisons of SC to General Activity and Treatment measures for settings and patients; (2) correlations between numbers of SC and initiation of SC with the patient characteristics of early-late, length of disability, and age; and (3) correlations between patients' initiation to staff and others.

I. Topography of Social Contact

Staff

Staff involvement. Each staff level's involvement in SC with patients is given in Tables 1 and 2. The first column shows the percent of involvement in the total number of conversational events with staff. The second column indicates the percent of involvement in the total, cumulative time of conversation. The third column, like the first, shows staff rate of involvement in all social bits, and the Total column combines conversation and social bits. (The total percentages for each column do not exactly add to 100% due to rounding of figures).

Table 1 (1968)

Staff Involvement (%) In

Social Contact With Patients

STAFF	N=431 CONVERSE	N=1847.5 TIME	N=566 SOCIAL BITS	N=997 TOTAL
Aide, Orderly	46.0%	48.5%	50.5%	48.5%
P. T.	14.1	9.2	14.5	14.3
O. T.	14.8	16.2	11.5	13.0
Nurse	13.0	11.5	11.3	12.1
Doctor	3.9	3.8	0.9	2.2
R. T.	0.5	0.8	2.1	1.4
Social Worker	1.4	3.9	1.0	1.2
Chaplain	1.6	3.0	0.7	1.1
Housekeeping	*	*	1.6	1.0
Volunteer	0.7	*	0.9	0.8
Lab, X-ray Tech.	*	*	1.0	0.8
Dietitian	*	*	0.5	0.5
Dental Asst.	*	*	*	*
Orthotist	*	*	0.5	*
Cafeteria Staff	*	*	*	*
Secretary	*	0.8	*	*
Voc. Counselor	0.7	0.0	*	*
Maintenance	0.0	0.0	*	*
School. Teacher	0.0	0.0	*	*
Dentist	0.0	0.0	*	*
Misc., Unidenti- fied Staff	1.1	1.0	1.6	1.4
	97.1%	98.7%	98.6%	98.3%

0% < * < 0.5%

Table 2 (1971)

Staff Involvement (%) in

Social Contact with Patients

STAFF	N=964 CONVERSE	N=2559.0 TIME	N=955 SOCIAL BITS	N=1919 TOTAL
Aide, Orderly	34.4%	33.9%	37.4%	36.0%
P. T.	19.7	13.8	23.8	21.8
Nurse	24.8	29.7	15.9	20.4
O. T.	11.9	10.9	9.9	11.0
Doctor	2.1	1.2	1.3	1.7
Volunteer	1.4	2.5	1.5	1.4
Lab, X-ray Staff	0.7	0.7	1.4	1.0
Secretary	0.9	0.8	0.9	0.9
Social Worker	0.8	2.1	*	0.6
Orthotist	*	0.9	0.6	*
Cafeteria Staff	*	*	*	*
Dietitian	*	*	*	*
R. T.	*	*	*	*
Housekeeping	0.0	0.0	*	*
Voc. Counselor	0.0	0.0	*	*
Maintenance	0.0	0.0	*	*
Chaplain	*	*	0.0	*
School Teacher	0.0	0.0	*	*
Dentist	0.0	0.0	0.0	0.0
Dental Asst.	0.0	0.0	0.0	0.0
Misc., Unidentified Staff	2.7	3.3	4.7	3.6
	99.4%	99.8%	97.4%	98.4%

$0\% < * < 0.5\%$

There are, of course, different numbers of staff in each level. Some shifts in relative staff rankings (i.e., changes in rate of involvement) can be seen from 1968 to 1971. For example, PTs and nurses increased, whereas aides and orderlies decreased involvement. However, the correlation between staff rankings for total rate of involvement for the two years is +.77, which is significant at the .01 level.

Patient range. The number of patients with whom staff had SC is pictured in Figures 1 and 2. It can be seen that aides and orderlies, PTs, OTs, and nurses contacted all the patients. Comparing the two figures we see that in 1971 volunteers and secretaries increased the number of patients contacted whereas doctors declined somewhat. When staff are ranked according to number of patients contacted, the rankings for the two years correlate +.80, which is significant at the .01 level.

Setting range. The 1968 data show that conversation with staff occurred in 10 settings and social bits in 13 settings -- a total of 15 different settings. (The total figure does not add to the sum of the first two because settings overlap). In 1971, there were 20 settings for conversation, 19 for social bits, and a total of 23 different settings. Figure 3 shows each staff level's setting range. As expected, staff with functions throughout the hospital (e.g., aides and orderlies) rank highest. Note that certain staff members whose duties are often considered setting-specific (e.g., OTs and PTs) had SC with patients in several settings. The correlations
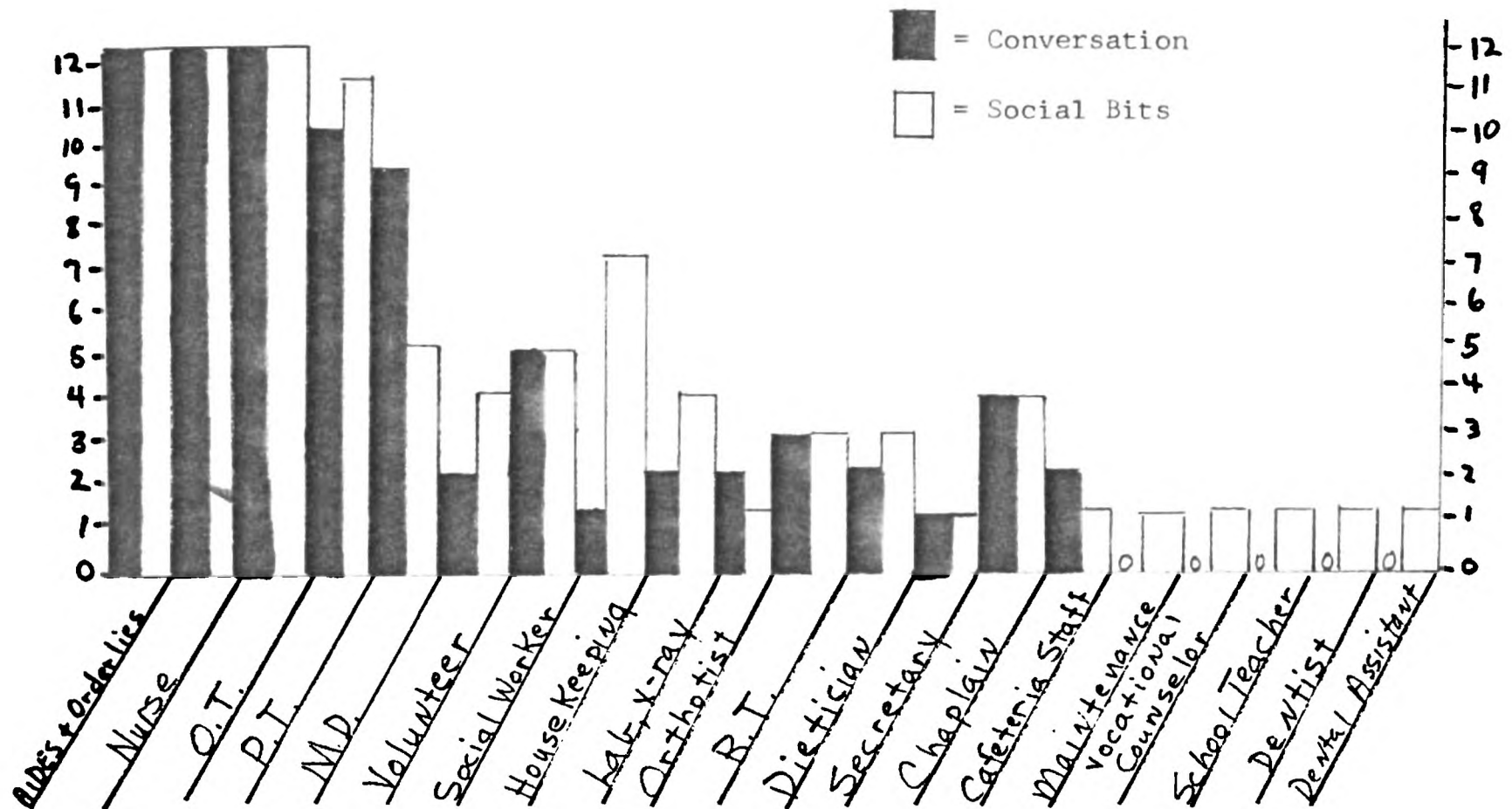
Figure 1 (1968)

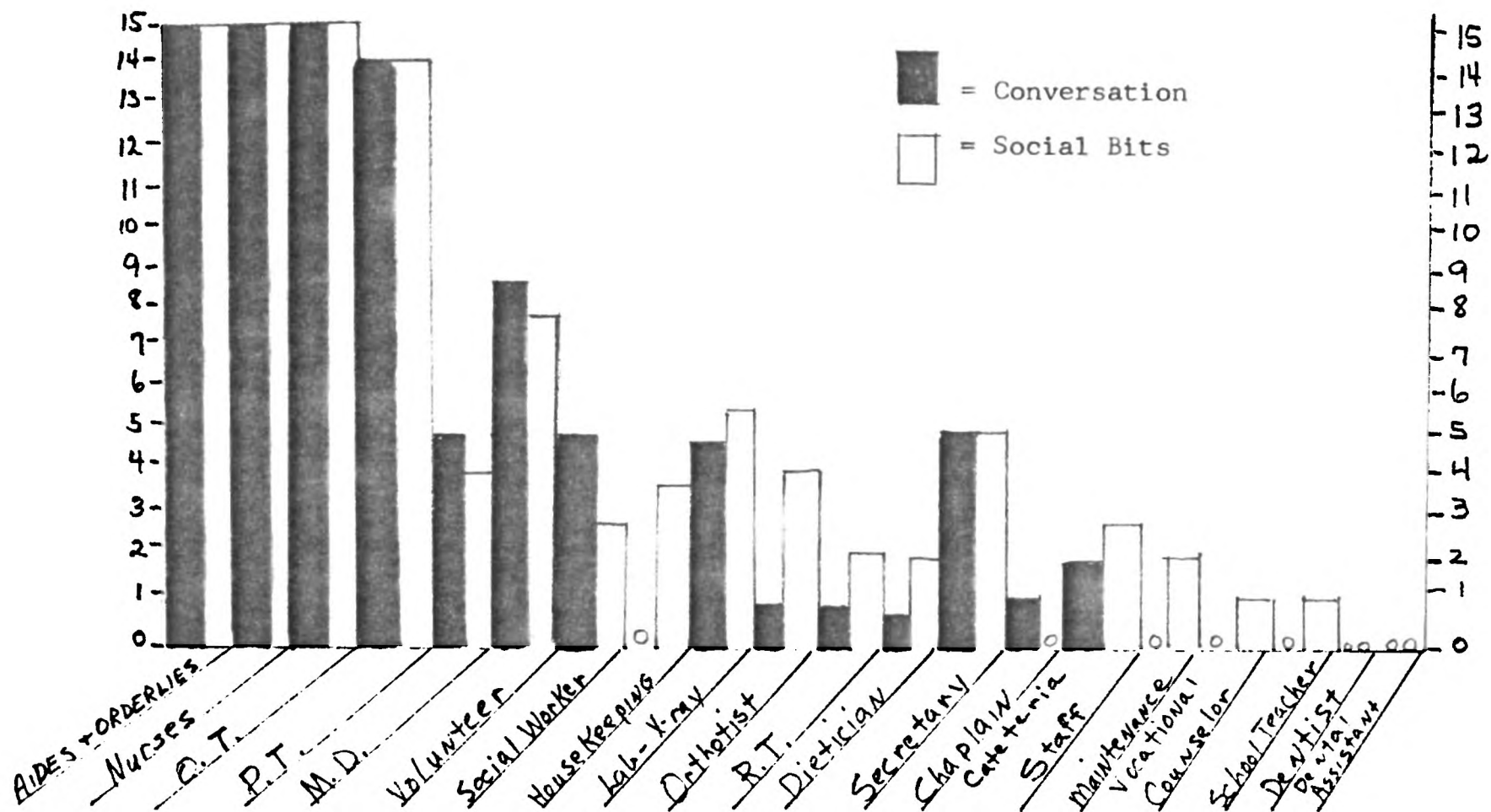Number of Patients with whom Staff had Social Contact

"Patient Range"

Figure 2 (1971)

Number of Patients with whom Staff had Social Contact
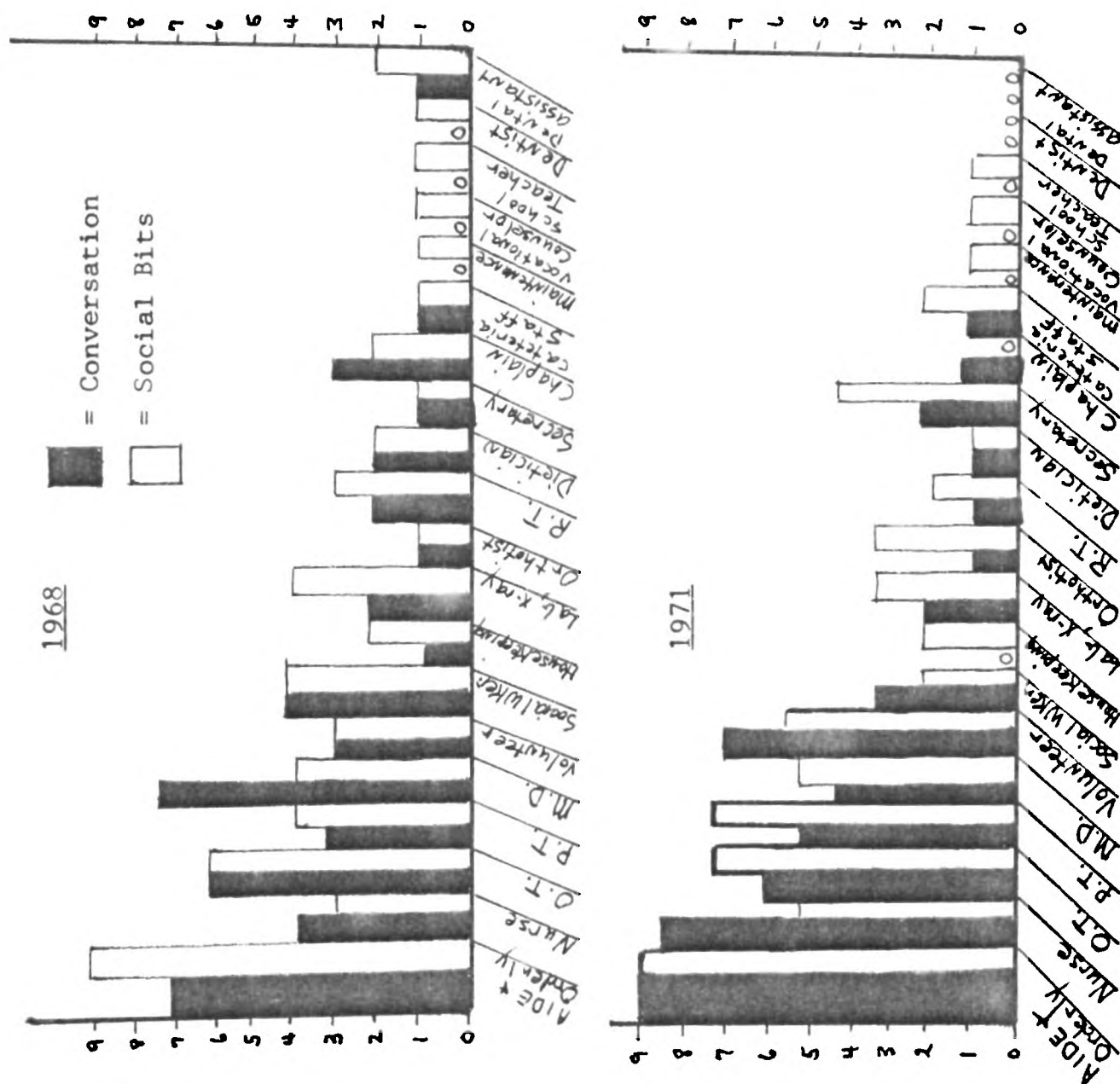
"Patient Range"

Figure 3

Number of different settings in which
staff had social contact with patients

"Setting Range"

on the rankings between the two years (Figure 3) are +.85

(p $<$ .01) and +.48 (p $<$ .01) for conversation and social bits,

respectively.

Settings

Where SC occurs. Figures 4 and 5 show where patients

experience SC with staff. The pie graphs show dramatically

the areas of high SC activity; it can be readily seen that about

90% occurs in the Wards, OT, and PT. For both years, these

three settings plus Hallway, Recreational Therapy, and Cafe-

teria rank 1 to 6. So it is not surprising that a high corre-

lation of +.76 (p $<$ .01) exists when both years are compared.

Patients' setting range. Figure 3 and page   gave the

topography of staff's setting range. The total number of

settings for patients as a group will, of course be the same

because they were the targets of the observations, and so an

occurrence of staff SC in a setting necessarily implies patient

SC there. Setting ranges for individual patients with staff

are given in Table 3. (Again, total does not equal the sum

of conversation and social bits for individual patients because

settings overlap. Also, the column totals in parentheses

represent the number of different settings in which SC occurred

during each year). The mean number of total settings for

patients is 5.9 in 1968 and 6.0 in 1971.

Patients

An overview of SC for patients in both years is given in

Table 4. Although there are more instances of SC in 1971, there

O.T.
12.5%

Halls - 5%

Recreational
Therapy - 3%

Cafeteria - 2%

Others - 3%

Wards
53%

P.T.
22%
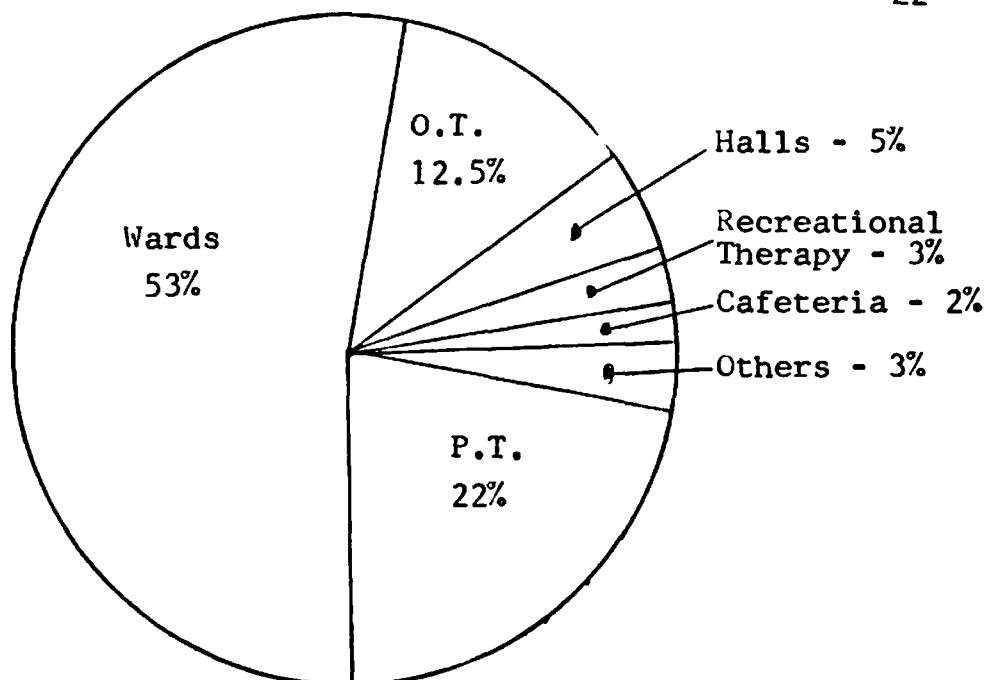
Figure 4a   (1968)

Percentages of total SC according
to behavior settings

O.T.
17%

Wards
55%

Halls - 4%

Recreational
Therapy - 7%

Cafeteria - 2%

Others - 1%

P.T.
14%
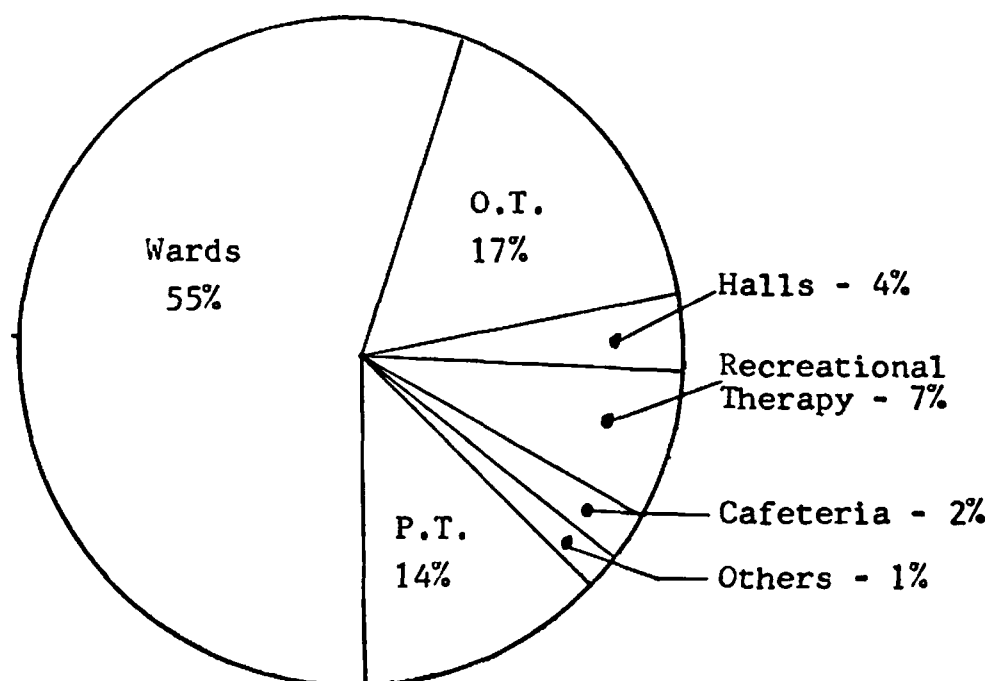
Figure 4b   (1968)

Percentages of time spent in conversation
according to behavior settings
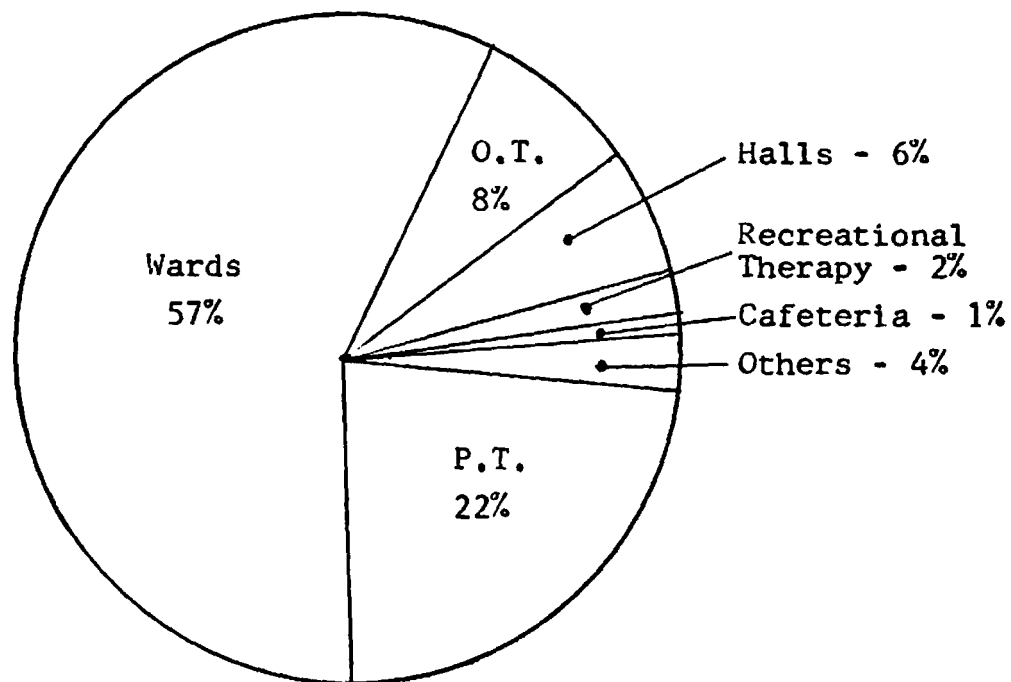
Figure 5a   (1971)

Percentages of total SC according
to behavior settings
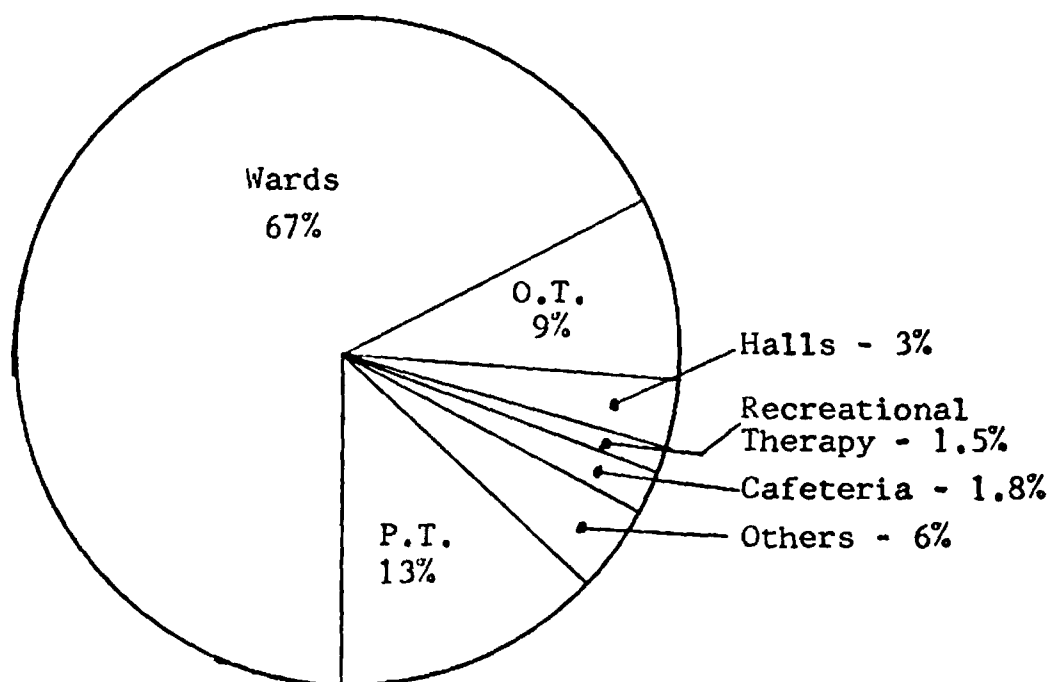
Figure 5b   (1971)

Percentages of time spent in conversation
according to behavior settings

Table 3

Number of different settings in which patients
had social contact with staff

"Settings Range"

PATIENTS	CONVERSE	SOCIAL BITS	TOTAL
01	5	7	7
02	4	3	4
03	3	3	4
04	3	6	6
05	6	7	8
06	9	8	12
07	4	7	7
08	4	4	4
09	4	3	4
10	4	5	5
11	4	4	4
12	5	6	6
13	2	1	2
14	5	4	5
15	3	6	6
16	5	6	6
17	6	5	6
18	4	3	4
19	7	7	8
20	4	5	5
21	10	11	12
22	4	4	4
23	4	4	4
24	4	4	6
25	4	5	5
26	6	6	6
27	5	6	6
Totals:	1968:(10)	(13)	(15)
	1971:(20)	(19)	(23)

Table 4

Means, percentages, and ratios of patient's SC
with staff and others

1968	1971
CONVERSE	CONVERSE
With staff: $\overline{X}$ = 32.2 With others: $\overline{X}$ 15.7 Staff + others: $\overline{X}$ = 47.9 Total chunks: $\overline{X}$ = 151.3 $\dfrac{\text{Converse with staff}}{\text{Total chunks}}$ = 21.3% $\dfrac{\text{Total converse}}{\text{Total chunks}}$ = 31.6%	With Staff: $\overline{X}$ = 56.5 With others: $\overline{X}$ = 27.6 Staff + others: $\overline{X}$ = 84.1 Total chunks: $\overline{X}$ = 266.3 $\dfrac{\text{Converse with staff}}{\text{Total chunks}}$ = 21.1% $\dfrac{\text{Total converse}}{\text{Total chunks}}$ = 31.2%
SOCIAL BITS	SOCIAL BITS
With staff: $\overline{X}$ = 46.5 With others: $\overline{X}$ = 27.2 Staff + others: $\overline{X}$ = 73.7 $\dfrac{\text{Social bits with staff}}{\text{Total social bits}}$ =77.4% $\dfrac{\text{Social bits with staff}}{\text{Total chunks}}$ =30.7%	With staff: $\overline{X}$ = 62.3 With others: $\overline{X}$ = 43.3 Staff + others: $\overline{X}$ = 105.6 $\dfrac{\text{Social bits with staff}}{\text{Total social bits}}$ =59.0% $\dfrac{\text{Social bits with staff}}{\text{Total chunks}}$ = 23.4%
TOTALS	TOTALS
With staff: $\overline{X}$ = 78.7 $\dfrac{\text{Total with staff}}{\text{Total chunks}}$ = 52.0% $\dfrac{\text{Total with staff}}{\text{Total staff + others}}$ = 65.0%	With staff: $\overline{X}$ = 118.8 $\dfrac{\text{Total with staff}}{\text{Total chunks}}$ = 44.7% $\dfrac{\text{Total with staff}}{\text{Total staff + others}}$ = 63.0%

is also a greater number of behavioral chunks, so the SC
ratio to other activity within the patients' stream of behavior
is very similar. This is most obvious for conversation, where
the percentages are within 1%, and for total staff involvement
where staff share 65% and 63% of all patients' SC. However,
a slight drop in staff's percentage of involvement in social
bits is seen in 1971. The importance of the greater number
of chunks and SC in 1971 will be discussed below.

Initiation

The fourth general area in which the data provide informa-
tion for this topographical description is initiation. Figures
6 and 7 show initiation between staff and patients. It appears
from the graphs that patients double their initiation of con-
versation in 1971 (from 16% to 34%) while staff remain about
the same. This also will be discussed below.

II. The Context of Social Contact

Does SC Occur Similarly in all Settings?

The relative frequency of SC within settings was given
above. Table 5 shows the results of correlating SC with
General Activity and Treatment within each setting. Settings
were ranked according to numbers of SC, General Activity, and
Treatment. The SC rankings were then correlated with the other
two rankings. Table 5 indicates that there is a high corre-
lation between SC and other kinds of activity within settings.
In a similar vein, Table 6 shows SC correlated with General
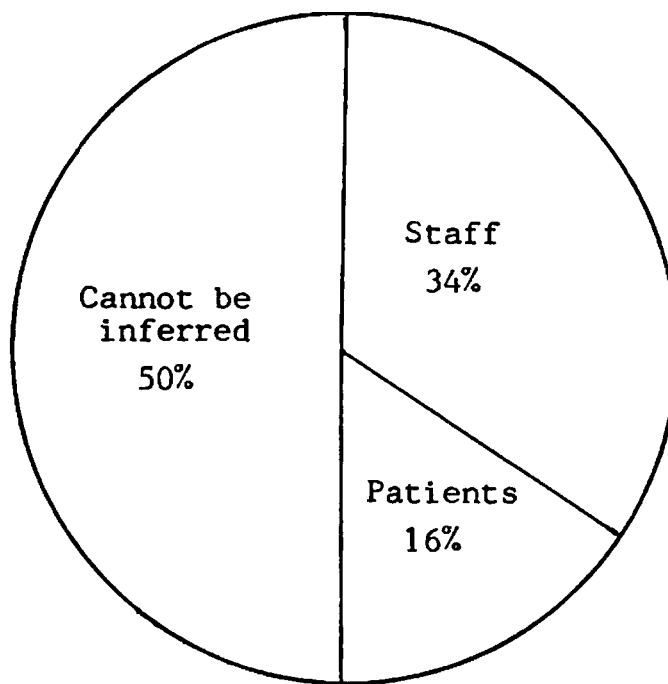
Figure 6a   (1968)

Initiation of conversation
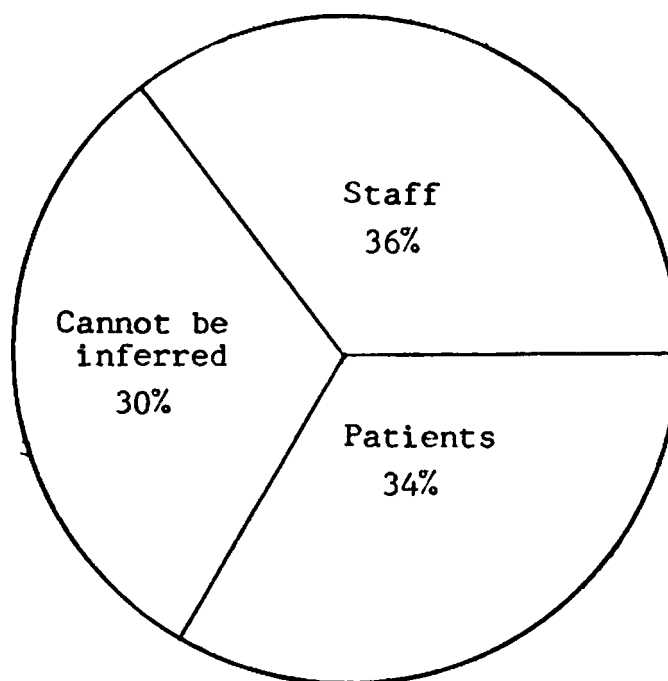
Figure 6b   (1971)

Initiation of conversation
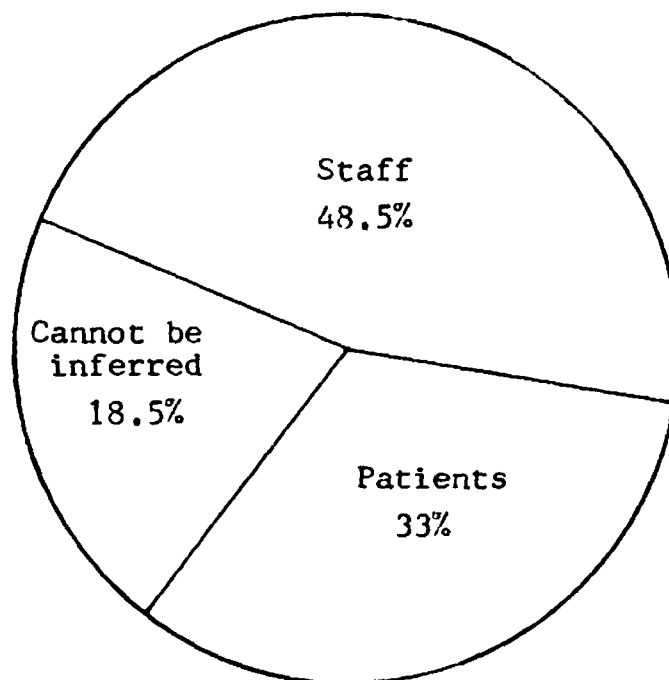
Figure 7a (1968)

Initiation of social bits
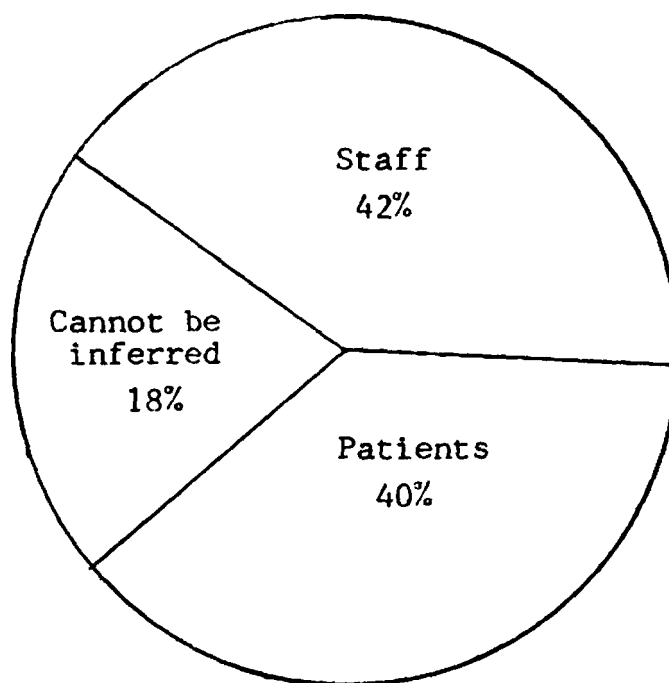
Figure 7b (1971)

Initiation of social bits

Table 5

Amount of social contact compared to General Activity

and Treatment within settings[*]

	Social Contact	
	1968	1971
General Activity	.96**	.82**
Treatment	.80**	.80**

$$**p < .01$$

[*] All correlations presented are Spearman Rank

Correlation Coefficients.

Table 6

Comparison Of SC With General Activity

And Treatment Within Settings

Patient	General Activity	Treatment
01	.72*	.36
02	1.00**	1.00**
03	1.00**	1.00*
04	.91**	.87**
05	.79**	.87**
06	.80**	.74**
07	.26	.47
08	.98**	.98**
09	.75	.60
10	.68	.70
11	.74	.63
12	.87*	.74
13	.50	.50
14	1.00**	1.00**
15	.70^a	.70^a
16	.48	.52
17	.88*	.83**
18	.67	.67
19	.94**	.97**
20	.62*	.55^a
21	.76**	.68**
22	.80*	.78*
23	1.00**	1.00**
24	.94**	.94**
25	.90*	.83*
26	.71^a	.68^a
27	.87**	.91**

$**p < .01$
$*p < .05$
$^ap \rightarrow .05$

Activity and Treatment for each patient within settings.
That is, for each patient, settings were ranked for amount
of General Activity, Treatment, and SC. For example, if a
patient has 1.00 correlation it means that his highest
General Activity (or Treatment) setting is also his highest
SC setting, and so on. There are some patients who do not
have significant correlations, but in general, SC correlates
with both General Activity and Treatment within settings for
individual patients. (Significance levels are not the same
for each patient because patients varied in number of settings.
Also, some apparently high correlations are not significant
because these patients had very few settings, requiring very
high or perfect correlations for statistical significance).

Does SC Relate to Patient Characteristics?

Early-late, length of disability, age. First, Table 7
shows the ranges of the patients on three characteristics.
Table 8 shows SC correlated with the early-late dimension and
shows no trend for SC to increase or decrease as a function of
time spent in the hospital. Similarly, the number of different
staff levels with whom patients had SC is shown in Table 9 to
bear no relation to length of stay in hospital. Table 10 shows
a slight trend for 1968 patients who have had their disability
longer to engage more in SC (especially social bits), although
this is not true for 1971. And Table 11 shows no consistent
relation between SC and age, although in 1968 younger patients
did tend to converse more and spend more time in conversation

Table 7

Data On Patients' Characteristics

	1968	1971
Length of Stay in Hospital		
Actual Time:	14 - 288 days $\overline{X}$ = 66.7	12 - 210 days $\overline{X}$ = 60.7
% Admission:	11.3- 82.0% $\overline{X}$ = 46.3%	15.2- 89.0% $\overline{X}$ = 59.1%
Length of Time Since Onset of Disability		
Actual Time:	127 - 1.5 mos. $\overline{X}$ = 31 mos.	12 - 1.5 mos. $\overline{X}$ = 6 mos.
% of Life:	40% - Less than 1%	5% - Less than 1%
Age	16 - 72 yrs. $\overline{X}$ = 32.0 yrs.	16 - 48 yrs. $\overline{X}$ = 28.6 yrs.

Table 8

Social contact and early-late patients

	% of Admission		Actual Time	
	1968	1971	1968	1971
Converse	-.32	+.21	-.26	-.07
Converse Time	-.13	+.25	+.19	+.03
Social Bits	+.19	+.07	+.10	+.19
Total	+.17	+.10	+.10	-.02

Table 9

Number of staff levels and early-late patients

	Number of Staff Levels	
	1968	1971
% of Admission		
Converse	+.01	-.11
Social Bits	+.12	-.23
Total	-.04	-.12
Actual Time		
Converse	-.30	-.10
Social Bits	+.02	-.07
Total	-.04	-.23

Table 10

Social contact and length of disability

	Length of Disability	
	1968	1971
% of Life		
Converse	+.18	-.19
Converse Time	+.11	-.09
Social Bits	+.47[a]	-.07
Total	+.37	-.10
Actual Time		
Converse	+.13	+.35
Converse Time	-.01	+.12
Social Bits	+.56[*]	-.09
Total	+.38	+.15

[*]$p < .05$

[a]$p \to .05$

Table 11

Social contact and age

	Age	
	1968	1971
Converse	+.49[a]	-.09
Converse Time	+.63[*]	-.09
Social Bits	+.13	-.02
Total	+.26	-.08

[*]$p < .05$

[**]$p < .01$

than older patients.

Patient initiation. Initiation of SC by patients, using proportion of initiation vis-a-vis staff and actual numbers of patient-initiated contacts is correlated with time in hospital, length of disability, and age in Table 12. No trends emerge except that in 1968 patients who had their disability longer tended to initiate social bits more than those whose lesions were more recent.

Staff initiation. Staff's initiation of SC in actual number of initiations to patients is correlated with patients' length of stay in hospital and age in Table 13. There is no trend for staff to initiate SC with patients differentially according to patients' age or length of stay in the hospital.

Patient Activity Level and Social Contact

As shown in Table 4, patients maintain a fairly constant ratio of SC to other kinds of behavior in 1968 and 1971. Using the General Activity and Treatment measures allows a view of each patient's SC in the context of all non-treatment activity. Table 6 showed the correlations of these measures for each patient by behavior setting. The data are combined across settings in Figure 8, showing ratios and group means of SC to both General Activity and Treatment for each patient. For example, patient #09 had slightly more total SC than General Activity chunks, and about twice as much SC as Treatment chunks.

Staff and Others

Patients' SC with staff and others. As seen in Table 4,

Table 12

Patient initiation, length of stay in hospital, length
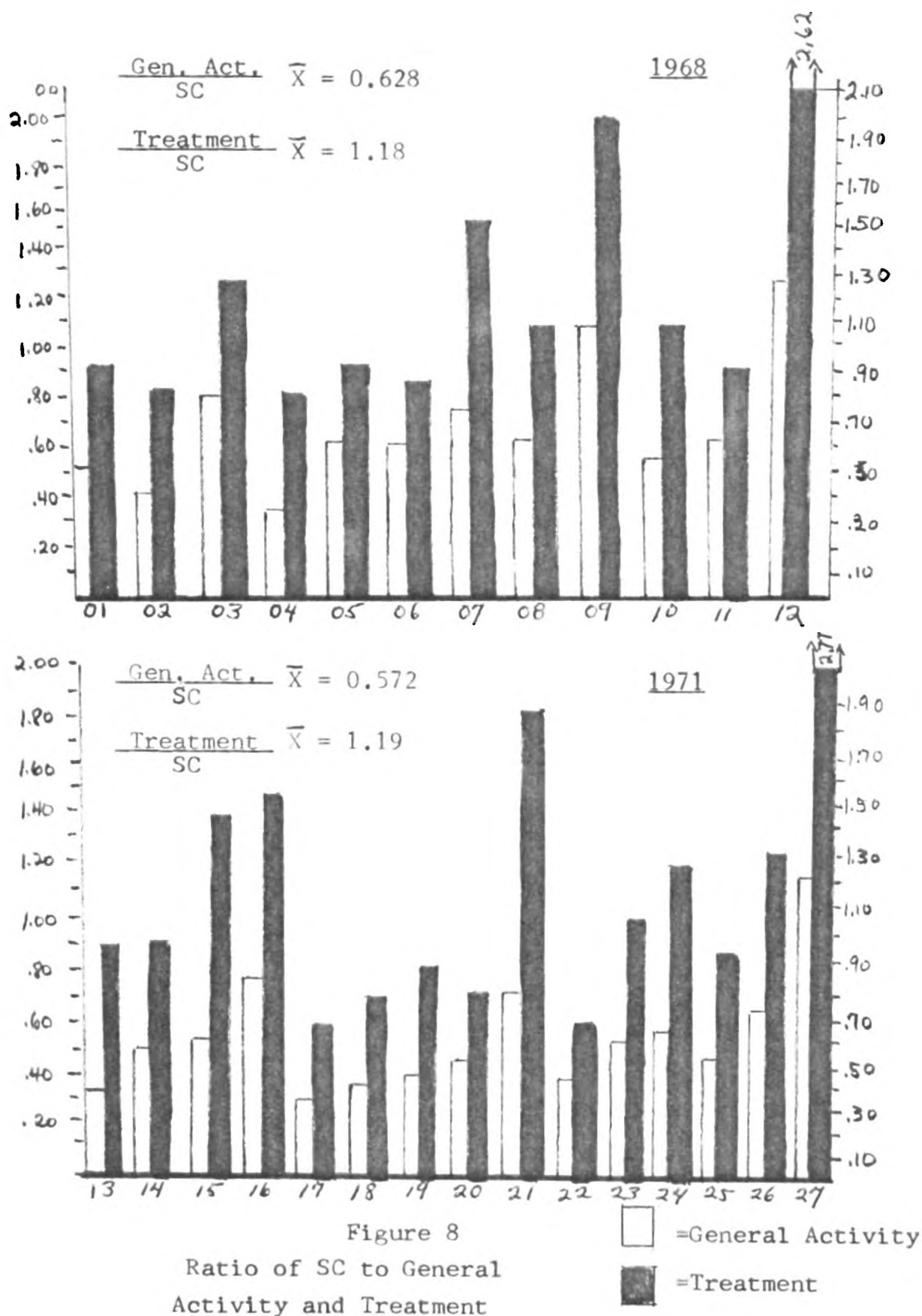of disability and age

		Patient Initiation (porportion)	
		1968	1971
Length of stay in Hospital	**% of Admission**		
	Converse	-.13	-.03
	Social Bits	-.40	+.07
	Actual Time		
	Converse	-.12	-.06
	Social Bits	-.10	+.07
Length of Disability	**% of Life**		
	Converse	+.26	-.09
	Social Bits	+.73*	-.09
	Actual Time		
	Converse	+.26	-.09
	Social Bits	+.70*	-.17
Age	**Age**		
	Converse	+.13	.00
	Social Bits	+.18	-.08
		Patient Initiation (numbers)	
Length of stay in Hospital	**% of Admission**		
	Converse	-.28	+.06
	Social Bits	+.17	+.03
	Actual Time		
	Converse	-.43	+.03
	Social Bits	-.27	+.08
Length of Disability	**% of Life**		
	Converse	+.34	-.19
	Social Bits	+.63*	-.18
	Actual Time		
	Converse	+.35	-.35
	Social Bits	+.69*	-.26
Age	**Age**		
	Converse	+.34	-.10
	Social Bits	+.17	-.12

$^*p < .05$

—

Table 13

Staff Initiation and Patients'
Length of Stay in Hospital and Age

		Staff Initiation	
		<u>1968</u>	<u>1971</u>
Length of stay in hospital	% of Admission		
	Converse	+.01	+.44
	Social Bits	+.48	-.11
	Actual Time		
	Converse	-.20	+.29
	Social Bits	+.32	+.01
Age	Age		
	Converse	+.36	-.08
	Social Bits	+.16	-.22

Figure 8

Ratio of SC to General
Activity and Treatment

□ =General Activity

▨ =Treatment

staff represent 65% and others, 35% of patients' SC in 1968;
in 1971, they show 63% and 37%, respectively. Table 15 shows
the correlations of patients' SC with staff and with others.
Patients in each year were ranked according to numbers of SC
with staff and numbers of SC with others, and these rankings
were correlated. Generally in 1971, but only for conversation
in 1968, individual patients show the same pattern of engagement
in SC with staff as with non-staff. That is, patients who
were high in SC with staff were also high with others in 1971,
but not in 1968.

Patient initiation to staff and others. Table 16 shows
the results of correlating the number of patient initiations
to staff and to others. There is a definite tendency for
patients to be consistent in initiation of SC to both groups.

Staff and others initiation to patients. Table 17 shows
to what degree staff and others initiate SC to patients and vice
versa. When SC does occur, staff are more initiating environ-
mental agents than others. For example, in 1968 for conversa-
tion, the staff/patient percentage ratio is 2.12 (i.e.,
33.9%/16.0%), but the other/patient ratio is only 0.77 (i.e.,
27.1%/35.0%). And patients are more initiating in general
vis-a-vis others than with staff, as those ratios show and the
higher percentages of patient initiations (35% versus 16%;
44% versus 34%, and so on).

Table 15

Individual patients' social contact
with staff and with others

	1968	1971
Converse	.56*	.76**
Converse Time	.08	.41
Social Bits	.05	.62*
Total	.40	.64**

**p < .01

*p < .05

Table   16

Patient initiation to staff and others

Patient initiation (numbers)		
	1968	1971
Converse	+.74**	+.70**
Social Bits	+.31	+.51*

**p < .01

*p < .05

Table 17

Initiation Between Patients

And Staff, And Patients And Others

	Converse		Social Bits	
	1968	1971	1968	1971
Staff:	33.9%	36.1%	48.5%	42.1%
Patients:	16.0%	34.1%	32.8%	40.1%
Staff %/Patients %	2.12	1.06	1.47	1.05
Others:	27.1%	29.0%	30.4%	26.4%
Patients:	35.0%	44.0%	54.6%	65.4%
Others %/Patients %	0.77	0.66	0.55	0.40
Staff %/Others %	1.25	1.24	1.60	1.59

CHAPTER IV

ANALYSIS OF THE DATA

What did the available data reveal? First, by looking
directly at the protocols and using computer print-outs of the
coded protocols, the amount of conversation and social bits is
readily available by patient or setting, offering a topograph-
ical description of these kinds of social contacts. Secondly,
what the print-outs definitely do not provide, and the proto-
cols rarely provide is the content of the contact, making
frequency or amount of SC the only reliable data available.
But from these data, what was found?

The four staff levels of aide-orderly, physical thera-
pist, occupational therapist, and nurse make up 90% of all staff
involvement in SC. Besides these four groups, patients can
expect SC with two other staff levels throughout a given day.
In comparing both years, there is much similarity in staff in-
volvement, setting range, and patient range for staff. This
fact is not remarkable in itself, but by using the same observ-
ational methods, the data show how staff's direct involvement
with patients on this SC measure can be seen to change over a
period of time. For instance, aides and orderlies percent of
involvement decreased, while PTs and nurses increased from
1968 to 1971. There was a slight downward trend for doctors
on all three measures on the one hand, while volunteers in-
creased quite noticeably in all three areas of involvement,

patient range, and setting range. These are examples of the
way the data can show shifts in the SC landscape of the
hospital.

In 1971, it appears that there was a great increase in
the number of settings. But the topographical description of
settings showed that all but a small percent of SC and time in
conversation occurred in the same six settings as in 1968.
In fact, SC in the ward area increased from 53% in 1968 to 57%
in 1971, indicating that, if anything, SC was slightly more
concentrated in this one area. So, an apparent jump in number
of settings that could be interpreted as an increase in patient
mobility or hospital social activity is tempered somewhat.

General Activity and Treatment within settings correlated
with SC, indicating that SC increases and decreases as a
direct function of molar behavior or activity within a setting.
A look at individual patients who were particularly high in
ratio of SC to other activity shows no factors such as age,
length of stay in hospital, length of disability, or diagnosis
to distinguish them. However, 9 of the 27 patients were not
in open wards, but in semi-private rooms. Of these 9, only 2
had high ratios (#09 and #21 in Figure 8). It could be that the
semi-private room setting is an inhibitor of SC.

The sheer increase in amount of SC in 1971 is tempered by
the fact that the ratio of conversation and of total SC to all
other activities are the same for both years. SC increased by

about 57% in 1971. However, the total number of behavioral chunks in 1971 also showed a 57% increase over 1968. Two conclusions are possible: either 1971 patients were more active across the board, or the observational or coding techniques changed to pick up more data (57% more to be exact). Since the increase of 57% is constant across all chunks and SC, it is more plausible to accept the second possibility. At any rate, it is an interesting problem that in the face of an increase of 57% in raw data, various rate measures remained constant.

There is some hint that early patients have SC with more staff levels and that youn,.er patients converse more than older patients (only in 1968). The former trend could be explained by the possibility that early patients have to see more staff levels for rehabilitation needs. In 1968, those patients who had disabilities longer engaged in more SC. This was not true for 1971, but the range of length of disability was very small in 1971, suggesting a more homogeneous group, and therefore not contradicting the 1968 findings. Thus it may be that SC increases for spinal cord patients with the passage of time, independent of other factors. Otherwise, no clear trends emerged between SC and the other patient characteristics analyzed.

There was a drop in staff initiation in 1971 and a rise in patient initiation. Staff, patients, and "cannot be inferred",

each shared about one-third of the total initiation. If "cannot be inferred" is equally distributed, then staff and patients initiate equally. Why is this not true for 1968? Observers were given more explicit instructions to focus on the patient in 1971; thus they would have been more prone to mention patients' initial involvement. This is a possible explanation for the change in 1971. (And it may be that this more explicit focus partially accounts for the greater amount of data collected in 1971). This whole area of initiation, judged from the protocols, presents a very great difficulty because it is so hard to make this dimension explicit while observing. However, from the available data, it appears that staff and patients taken as groups initiate SC to each other equally.

There are, of course, individual differences in patients' initiation, but no important trends were found, with the one exception that in 1968 patients who had their disability longer seem to initiate more social bits. This is similar to the findings for amount of SC for these patients. Thus it may be that the longer a patient has his disability, the more SC he experiences and the more self-initiating he is. Also, for the 1968 data, there is some evidence that patients who were in the hospital longer actually initiated less, which is surprising since, as mentioned above, the previous analyses using these data showed that late patients were very much more active and initiating than earlier patients for all activity. (Although

in the present study patients were ranked according to length of stay in hospital, whereas the previous investigators divided the patients into two groups of early and late patients for analysis). Thus, late patients can be considered more initiating in the area of primary, adaptive activity but not in SC. The present data also show that staff may tend to initiate more to these same patients. Thus, we have a curious phenomenon: advanced patients are initiating SC less while staff are initiating more. This could suggest a point of diminishing returns for patient initiation.

Individual patients tend to experience SC with staff and others in a similar pattern; that is, although patients have more SC with staff, those patients who talk a lot with staff are the same ones who talk a lot with others. The same is true for initiation. So, although staff are initiating more SC to patients than are others, patients do not proportionately initiate more to them than to non-staff, as a social learning theory might suggest. It seems much more likely that patients are either talkers or not, more or less independently of the specific social reinforcement in their habitat. The data provide no way to test this idea. It is plausible to hold that the protocols do not capture the nature of social reinforcement, or that patients simply varied in sociability before they ever entered the hospital.

When SC does occur, patients are more initiating to others than to staff. Since there is some suggestion that as patients

advance in the course of hospitalization they initiate less
to staff and staff initiate more, could it be that when patients
leave the hospital they would experience a rather drastic
shift in their experience of SC? They could be putting forth
much more effort to initiate SC than others around them (be-
cause the staff would no longer be part of their habitat).
This might account for the phenomenon often mentioned anec-
dotally that spinal cord patients appear to become inactive
and even withdrawn during the first year outside of the hospital.
The issue conceptually may have something to do with the
effects of institutionalization -- that is, the different effects
of the hospital and home habitats. Empirically, it is a ques-
tion for longitudinal research that follows patients after they
leave the hospital.

CHAPTER V

DISCUSSION

In a homespun statement on how we label people, one of
William Faulkner's characters said: "It's like it ain't so
much what a fellow does, but it's the way the majority of
folks is looking at him when he does it" (Faulkner, 1946,
p. 510). Nietzsche's more intellectual scoff was against
those who believed in the "dogma of the immaculate perception."
On a more scientific level, it is said that 100,000 bits of
information strike the nervous system every second. The issue
is that observational methods are filled with choice points
for observers -- choices as to what to look for and how. The
twofold purpose of the observations used for this study was
to describe the topography of patients' experience in terms of
overt molar behavior, and a context to make that experience
intelligible. The two codes of conversation and social bits,
along with the other codes of where, with whom, etc. do provide
that topography. It is the lack of a proper context for this
specific behavior of social contact that still makes it seem
unintelligible. At least the procedures and results of this
present study have not revealed ways to manipulate the proto-
col data of conversation and social bits into meaningful
patterns.

The original investigators have quoted Pierce (1969) who
states that "A model which is truly descriptive must include

the patient -- preferably in terms of his response to behavior
of the system...." Vineberg, Willems, and LeCompte continually
emphasize that their methods tap what patients do and what is
done to them. For behavioral observations to be both truly
descriptive and behavioral, both stimulus and response must
be described (Bijou, Peterson, and Ault, 1968). That is,
antecedent and consequent events that surround a particular
behavior are important and, in fact, necessary to understand
that behavior. The protocol data, with the patient as the
target and others moving fluidly in and out of his behavior
stream, make it very difficult to understand what the environ-
mental contingencies of social contact are. This raises three
major issues.

First, Barker (1960) calls all persons within a setting
equipotential as both stimulus and response environmental
agents -- they can respond and be responded to. In one sense,
a nurse is a nurse is a nurse -- in the sense used here where
all nurses' contacts were summed to arrive at a rate measure
of involvement for this staff level. But not all nurses are
equal because the presence of a nurse in a setting,
although necessary for contact, is not sufficient. What are
missing from the data are the antecedent conditions which
might heighten the probability of contact when a nurse is present.

It could be argued that this point is irrelevant because
only the frequency or amount of behavior is required. But

that brings up the second issue in this search for an intelligible context: social contact could not be separated from other activities to relate it to anything. That is, social contact could not be distinguished for patients or settings beyond a general topographical description. There is little that can be said beyond: there is more social contact in these settings or with these staff or these patients. Obviously, the "patterned connections" which the observations were supposed to give are hard to find for conversation and social bits. However, it is important to point out that the previous investigators have found many patterned connections for behaviors other than social contact. These patterns have provided valuable information that can be used to evaluate patients' and the hospital's performance as well as assess the effects of change in the hospital.

A behavioral description should offer information as to how increases or decreases in behavior come about. The observational data used here, with their focus on the patient and molar behavior, do not offer the kind of specific, more molecular antecedents and consequences that might do this. For instance, there seemed to be a decrease in social contact within the OT setting from 1968 to 1971; but there is nothing in the protocols to hint at how this came about. (There could, of course, have been changes in the setting itself that caused this). Thus if one were to ask how the hospital can increase social contact in this setting, there is no way of answering.

Behavioral descriptions should point to something outside
of the target person's skin to "explain" change.

The third issue is related to the first two. One purpose
of the observations was to try to see how patient behavior changed
as treatment progressed. Perhaps it is not so much the fault
of the observations as it is a theoretical void, but there
is nothing concrete to relate frequency of social contact to
progress. In fact, it was the lack of a theoretical guide
that prompted the investigators to take more of an empirical
than rational approach. No one would argue that re-social-
ization is not a part of rehabilitation, but how does frequency
or amount of conversation and social bits relate to this?
(And verbalizations are only part of socializing). It is not
necessarily true that more talking is equal to more re-social-
ization is equal to progress. Is the nature of conversation
such that its increase implies increased "progress", just as
an increased range of motion in a limb is considered progress?
This may be, but progress also implies the use to which the
patients put their abilities. (In that sense, even increased
range of motion is not progress unless the patient then uses
that mobility). Again this points to the empirical nature
of the observations: they observed "uses", behaviors, not the
concept of progress. However, the occurrence of social contact
is not similar to the occurrence of certain mobilities because
the nature of a physical disability relates specifically to
mobility. But patients do not lose their ability to talk in

the same sense that they lose their ability to move limbs.

An instance of relating behavior to specific variables comes from Kellam (1960) who made frequency counts of psychiatric patients' social contact. He recorded social contact only outside of scheduled activities and meals. This procedure could be considered too selective or missing a lot of the data. But the patients observed were withdrawn schizophrenics, and social contact was thus considered a correlate of progress. Kellam omitted scheduled activities because of the demand characteristics (e.g., group therapy). Such a frequency count for patients with drug abuse problems would leave one with uncertain data; that is, without an intelligible context. Kellam's rationale and procedure suggest that some parameters for understanding social contact may have to be outlined before observing.

There have been many procedures developed to study social contact or person-person interactions (for example, Bales, 1950; Baumrind, 1964; Borgatta, 1963; Dyck, 1963; Schoggen, 1963). Usually, a pre-set category system is devised (rational approach) and observations are made on these dimensions. Dyck (1963) for instance, sets out four conditions for an interaction: a subject, another agent, a continuous topic, and a reason for being together. The last one, which is the originating ground for the interaction, is given twelve different dimensions. A more continuous empirical approach is using wireless microphones attached to the target persons

(e.g., Herbert and Swayze, 1964). The tremendous complexity of the recording or encoding tasks that these methods involve points to the difficulty in observing the intelligible context of human interaction. Perhaps some combination of the stream of a person's behavior and concommitant observations of social interaction as a target behavior would provide both the molar and molecular antecedents and contingencies of social contact.

While Louis and Mary Leakey spent some twenty years in the Olduvai Gorge in East Africa, they collected data on the landscape only casually because they were looking for one specific thing: that piece of bone that would be the earliest known man. But that relic made sense (i.e., definable as "earliest") only because it was found in a geological area known to be of a certain age. Pierre Teilhard de Chardin went to China to describe a landscape of bio-geological formations. In the process, a combination of human fossils and charred artifacts were in such a position as to be recognized as man's earliest use of fire. These two approaches resulted in two of the most significant anthropological findings of the century. In the former approach, much empirical work had preceded: the Leakeys knew what they were looking for. In the second, there was little to go on, so Chardin had the sheer empirical pleasure of looking for anything within the limits of his observational skills and tools. The observational data of the present study are more of the second type. The tools of observation were well refined, but the findings here suggest

some re-arrangement of the procedure, either in the recording or encoding process with respect to social contact. (Recently the research team at Texas Institute for Rehabilitation and Research has stopped coding conversation and social bits in the same manner as before, principally because reliability measures for these two events were low). It is suggested that if social contact is to be studied, more specific environmental variables should be described.

REFERENCES

Bales, R. F. Interaction process analysis. Cambridge: Addison-Wesley, 1950.

Barker, R. G. Ecology and motivation. Nebraska symposium on motivation, 1960, XVIII, 1-49.

Barker, R. G., Wright, H. F., Barker, L. S., & Schoggen, M. Specimen records of American and English children. Lawrence, Kansas: University of Kansas Press, 1961.

Baumrind, D. Naturalistic assessment of parent-child interaction. Paper presented at Conference on Research methodology of Parent-Child Interaction, Syracuse, N. Y., 1964.

Bijou, S. W., Peterson, R. F., & Ault, M. H. A method to integrate descriptive and experimental field studies at the level of data and empirical concepts. Journal of applied behavior analysis, 1968, 1, 175-191.

Borgatta, E. F. A new systematic interaction observation system: behavior scores system. Journal of psychological studies, 1963, 14, 24-44.

Byrne, D. Assessing personality variables and their alterations. In P. Worchel and D. Byrne (Eds.), Personality change. New York: Wiley, 1964, Pp. 38-68.

Dyck, A. J. The social contacts of some Midwest children with their parents and teachers. In R. G. Barker (Ed.), The stream of behavior. New York: Appleton-Century, 1963, Pp. 78-98.

Faulkner, W. As I lay dying. New York: Modern Library, 1946.

Ferster, C. B. A functional analysis of depression. American psychologist, 1973, 28, 857-870.

Kellam, S. G. A method for assessing social contact: Its implication during a rehabilitation program on a psychiatric ward. Journal of nervous and mental disease, 1961, 132, 277-288.

Herbert, J., & Swayze, J. Wireless observation. New York: Columbia University, 1964.

LeCompte, W. F. The taxonomy of a treatment environment. Archives of physical medicine and rehabilitation. 1972, 53, 109-114.

Pierce, L. M. A patient-care model. American journal of nursing, 1969, 69, 1700-1704.

Schoggen, P. Environmental forces in the everyday lives of children. In R. G. Barker (Ed.), The stream of behavior. New York: Appleton-Century, 1963.

Straus, M. A. Measuring families. In H. T. Christensen (Ed.), Handbook of marriage and the family. Chicago: Rand McNally, 1964, Pp. 335-400.

Vineberg, S. E., & Willems, E. P. Observation and analysis of patient behavior in the rehabilitation hospital. Archives of physical medicine and rehabilitation, 1971, 52, 8-14.

Weick, K. E. Systematic observational methods. In G. Lindzey & E. Aronson (Eds.), Handbook of social psychology. Reading, Mass.: Addison-Wesley, 1968, pp. 357-451.

Willems, E. P. The interface of the hospital environment and patient behavior. Paper presented at the 47th Annual Session, American Congress of Rehabilitation Medicine, New York, 1970.

Willems, E. P. The interface of the hospital environment and patient behavior. Archives of physical medicine and rehabilitation, 1972, 53, 115-122.

Willems, E. P., & Raush, H. L. (Eds.) Naturalistic viewpoints in psychological research. New York: Holt, Rinehart, and Winston, 1969.

Willems, E. P. Changes in the micro-ecology of patient behavior over three years: Direct observations of patient behavior. Paper presented at American Psychological Association, Montreal, 1973.

Willems, E. P., & Vineberg, S. E. Psychological aspects of disability: The interface of environment and behavior. Div. 22 Bulletin, American Psychological Association, 1969, 16, 74-88.

Willems, E. P., & Vineberg, S. E. Procedural supports for the direct observation of behavior in natural settings. Texas Institute for Rehabilitation and Research, Baylor College of Medicine, Houston, Texas, 1970.

Wright, H. F. Observational child study. In P. H. Mussen (Ed.) Handbook of research methods in child development. New York: Wiley, 1960.