

PRESUMED "TASK" VERSUS "PERSON" ORIENTATION AS REFLECTED IN SPEECH
INTERACTION CHARACTERISTICS OF SURGICAL AND PSYCHIATRIC
NURSES IN A STANDARDIZED INTERVIEW

by

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Introduction

In his study of group dynamics, Bales (1) found that there are a number of roles (or jobs) which need to be filled in order for a problem-solving group to work effectively. Interestingly, one can often distinguish within such a group two separate leaders who are functioning simultaneously in completely different roles. One leader will be the "task specialist" who is primarily interested in getting on with the job at hand, characteristically with little regard for the interpersonal interactions going on within the group. The second leader has been described as the "social-emotional specialist" whose job is that of keeping the internal harmony of the group intact as it pursues its task. In other words, one group leader manifests relatively impersonal concerns and the other leader tends to the interpersonal demands of the group members. The importance of each activity in maintaining a smoothly functioning, effective problem-solving group is evident. However, the rarity with which these two kinds of orientation (personal and impersonal) is found within the same individual is candidly pointed out by Bales who says (from the point of view of the "task specialist"): "It is a kind of political maxim that it is almost impossible to elect the person who is technically best suited for an office - he is generally not popular enough. Surely there must be many persons in leadership positions who welcome any theory that explains to them that their lack of popularity is no fault of their own but a result of a specialization that is in the nature of things." (1 , pg. 443)

Although not specifically tied to Bales' above-mentioned findings in group dynamics, an interesting concept described by Raskin, Baruchow and Golob (24), that of "task-orientation" versus "person-orientation" in nursing, seems logically to evolve from them. That is, certain nursing

specialties place an emphasis on non-personal technical skills related to patient care whereas others focus upon interpersonal interactions in treatment. To illustrate the extremes, an operating room nurse (scrub nurse or circulating nurse) could be described as a highly trained individual who spends most of her time preparing for, participating in, or cleaning up after surgery. She has little personal contact with patients and much of her work is of a nature which does not require extensive interpersonal interactions with those around her. A psychiatric nurse, in contrast, engages herself largely in interpersonal involvements. Activities such as patient counseling, aide supervision, group therapy meetings and staff conferences occupy most of her day and the demands made upon her nursing skills which relate to physical illness are minimal. In this study, then, task-orientation is seen as implying nursing activities that emphasize the utilization of impersonal technical skills in patient care and which do not provide nurses with the opportunity for intensive and sustained contact, on an interpersonal level, with patients. Person-orientation, on the other hand, implies predominantly interpersonal involvements by the nurse in the course of patient treatment, with a minimal demand on her traditional nursing skills learned in nursing training.

The significance and usefulness of this concept exceeds that of merely providing a classification system with which to characterize various nursing jobs. Raskin, Baruchow and Golob (24) performed a factor analysis on numerous items relating to nursing attitudes and personality factors which were obtained by way of a self-administered questionnaire from 160 registered nurses. This sample included psychiatric nurses, operating room nurses, orthopedic nurses and tuberculosis nurses. Their findings suggested that there are important correlates which may be

present in addition to either a person- or task-orientation. Those nurses who indicated a predominant person-orientation (i.e., psychiatric nurses) tended to score highly on those variables relating to leadership skills whereas those nurses with a task-orientation (i.e., operating room nurses) tended to see a more dependent, subservient position for themselves in the hospital setting. With regard to the latter group, the authors state: "Task orientation or the tendency to emphasize the skilled-technical aspects of nursing appears to be an expression of a general inability to get close to people and a pervasive need for proscriptions, limitations, and controls in one's social and personal relationships" (24 , pg. 187). In short, there seem to be personality correlates associated with the task- versus person-orientation concept.

Partial verification of this is seen in numerous studies (5, 12, 13, 20) which have shown, by use of various personality assessment devices - particularly the Edwards Personal Preference Schedule, that there are personality differences between nursing and non-nursing groups as well as between groups of nurses representing different nursing specialties. While it is true that individual scores overlap between groups, there are suggestive differences between the group means.

A frequent comparison which has been made in the past is that between psychiatric nurses on the one hand and general medical and surgical nurses on the other. Navran and Stauffacher (21,22) have performed two oft-quoted studies which present results rather typical of those which appear in subsequent studies. Using the Edwards Personal Preference Schedule (7), which is a forced-choice, paper and pencil device that presumably measures 15 personality traits or needs, they found that general medical and surgical nurses (GMS) had significantly higher scores on certain

traits than did psychiatric nurses. These included Order, Deference, Endurance and Abasement. Psychiatric nurses obtained higher scores on Dominance, Aggression, Introception and Heterosexuality. In interpreting these findings, the authors provided a girder which lent support to the task-or-person orientation later to be elaborated in more detail by Raskin, Baruchow and Golob (24). They stated: "Translated freely, it would appear from these quantitative differences that GMS nurses are much more work-oriented than people-oriented" (22, p. 66).

Lentz and Michaels (9, 10, 11) have studied personality differences between medical and surgical nurses, finding that the Edwards Personal Preference Schedule can differentiate these two groups of nursing specialists, and can also differentiate each of these groups from neuropsychiatric nurses. They see, then, at least three relatively separate EPPS patterns appearing among these three groups of nurses and speculate about what further contrasts might be found between groups of nurses representing still other nursing specialties.

However, it should be made clear that data relating personality factors to occupational setting or to job orientation in nursing are not conclusive. Costello and Anderson (6) administered the Kuder Preference Records, Vocational and Personal, to groups of psychiatric and GMS nurses. They compared the group scores on 15 items but obtained only one significant difference. Caputo and Hanf (2), using the Edwards Personal Preference Schedule, found high correlations among various nursing groups on their rankings of the EPPS traits. However, equally high

correlations were obtained between nursing and non-nursing groups. No unique and consistent "nursing personality" could be identified by them.

Undoubtedly the measuring devices available to investigators who are interested in the interrelationships which may exist between personality and occupation leave something to be desired in terms of their precision and accuracy. Added to that are the vast scope of the terms "personality" and "occupation" and the lack of adequate theoretical conceptualization for either term. Furthermore, idiosyncratic likes and dislikes, and large individual differences have to be considered in understanding those terms. Indeed, when these factors are weighed, it may seem surprising that any suggestive data exist at all which relate personality to occupation. Yet, as Roe (25) and Super (27) point out, not only nursing but many other occupational settings can be characterized to some degree by the interests and personality manifestations of successful members of those occupational groups. There is, then, a problem worth pursuing.

This study proposed to investigate the temporal verbal behavior of two groups of nurses, psychiatric and surgical, which represent widely different work settings within nursing. Interview speech behavior research, as summarized in Matarazzo, Wiens and Saslow (15) has focused upon what appears to be an important dimension of "personality" - that of how people talk. That is, of interest have been the temporal, non-content aspects of verbal behavior (frequency and duration of speech and silence units) as they are manifested in a standardized interview. Although perhaps not seen by some as very revealing, compared to the content of what an individual says, this research has uncovered some startling and significant information which has implications beyond that of the laboratory setting (14,15).

An intuitive appreciation of the importance of the non-content aspects of speech behavior can be obtained from the following. Chapple, a pioneer investigator in this field has written: "We all know, as a matter of observation, that people have different rates of interaction. Some of our friends or acquaintances seem to talk and act very speedily as compared to ourselves; others are slow and deliberate. These characteristics of individuals are something we intuitively recognize, and we are often at variance with the rates at which others act. For example, when there are two persons in interaction, one whose actions are quick and speech voluble, and the other, slow and given to long, well-rounded periods, we are apt to find that the speedy one keeps interrupting the slow one, jumping in when the other pauses, and so on. If the slow individual is persistent, he may finally wear the other down, and our fast individual will subside into silence broken with a few "impatient" or "bored" remarks. Or conversely, the speed at which the fast person acts may so upset the slow individual that it will throw him off his stride and he will later confess that he thought the other person "hard to talk to," "never stuck to the subject," "always interrupted " (3 , pp. 31-32).

The underlying philosophy of interview interaction research as described in Matarazzo, Wiens and Saslow (15), explains the emphasis upon the relatively circumscribed area of human behavior with which it is concerned. Because efforts to characterize, study and describe "personality" as a single global entity have not proven as fruitful as would be hoped, the study of single dimensions of behavior, and a careful delineation of the parameters involved (as with the study of intelligence, for example) may in the long run allow an understanding of "personality" about which considerable agreement could be obtained.

In addition to many other findings, interview interaction research has shown that, although individual differences are great, any given individual manifests highly consistent temporal patterns of speech behavior both within and between standardized interviews. That is, given any interviewer who follows certain prescribed rules governing his verbal and non-verbal interview behavior, an interviewee will show a remarkably consistent interaction pattern if he is interviewed as much as months apart by the same or different interviewers (26).

Any proposal to investigate interview interaction differences which might exist between psychiatric and surgical nurses involves three assumptions. One is that because there is a remarkable consistency of speech patterns manifested by a given individual within the interview setting, there must also be a corresponding consistency of temporal interaction behavior that is operating outside the interview setting in day-to-day living situations. The precise nature of this assumed consistency (outside the interview setting) cannot, however, be defined at the moment because of a variety of influencing conditions present in day-to-day conversations which have not as yet been identified and quantified (e.g., location, duration, topics discussed, role relationships of the individuals involved, etc.). A second assumption is that the individual's speech behavior plays an important role in his functioning. A third assumption is that different occupational settings very likely require different verbal skills from the occupants of those jobs.

There is supporting evidence for these assumptions. Chapple (4) found that factory supervisors were more active, verbally, than non-supervisory individuals, and they also responded more quickly and initiated more interview action than their non-supervisory cohorts. Johnson and

Simon (8) studied several aspects of public health nurse home visits. They found that the verbal activity of the nurse - both content and temporal - was influenced significantly by the kind of visit which she was making. Post-partum visits generally were accompanied by a high level of talk output, with the introduction of numerous ideas and advice. A visit to a cardiac or tuberculosis patient needing, perhaps, only a hypodermic injection, was accompanied by rather different speech behavior. More recently, Wiens, Matarazzo, Soslow, Thompson and Matarazzo (28) have demonstrated that nursing supervisors and head nurses have a longer average duration of speech than do staff nurses. They tend also to interrupt the interviewer more often and to "give way" less frequently when interrupted than do staff nurses. Thus, it is clear from the above studies that a variety of factors surrounding day-to-day conversations can have a significant effect upon verbal output (Johnson and Simon). Furthermore, the holders of different jobs may exhibit contrasting verbal patterns, though it is not clear from Chapple, or Wiens, et al., whether the observed differences are a function of the job itself, or a manifestation of a pattern of verbal behavior already existing prior to the individual's assuming his position (or a combination of both).

It is now possible, then, to formulate hypotheses predicting temporal interaction behavior in a standardized interview which should accompany a (presumed) task- or person-orientation in nursing. Specifically:

1. Psychiatric nurses (viewed as person-oriented) should talk considerably longer, on the average, each time they speak than will surgical nurses (viewed as task-oriented). The reasons are as follows. It seems reasonable that the total verbal output by a nurse during her working

hours might be directly related to (or "conditioned" by) the amount of interpersonal interaction required by her job. The performance of highly technical, manual skills which are performed by the surgery ward nurse while rendering intensive post-operative care or by an operating room nurse during her daily duties, can often be done with a minimum of conversation. In contrast, the variety of meetings and discussions which seem to be in abundance at psychiatric institutions, and the activities concerned with patient care on the ward, require only verbal participation by the nurse in most instances. Phillips, Matarazzo, Matarazzo and Saslow (23) offer additional evidence bearing on the above hypothesis. They have shown that patients who have high levels of verbal activity (long durations of speech units) exhibit interview content which can be described as being more oriented towards other people and towards interpersonal interaction. In short, a person-orientation, then, implies a longer duration of utterance. In contrast, those patients who were less verbal tended to emphasize non-personal concerns during the interviews. That is, a non-personal interview was accompanied by shorter speech units than was the case with the more "personal" patients. Further support for this hypothesis comes from Raskin, Baruchow and Golob (24), and from Wiens, Matarazzo, Saslow, Thompson and Matarazzo (28). Raskin's factor analysis showed that those nurses who were characterized as person-oriented emphasized leadership skills (the ability to assume responsibility, to act independently and to give orders, etc.) to a greater degree in their responses to a questionnaire than did the task-oriented individuals. It will also be recalled that Wiens, et al. found that those nurses in leadership roles (i.e., supervisors and head nurses) were characterized by longer durations of utterance than their non-supervisory colleagues. Since psychiatric nurses were shown by Raskin, et al. to be relatively more person-oriented

(i.e., exhibiting leadership concerns, independent action, etc.) it seems reasonable to extrapolate as follows. Because psychiatric nurses have shown a greater degree of leadership interest and facility, their verbal output should approximate that of other individuals in leadership (or supervisory) positions (such as the nursing supervisors and head nurses, or Chapple's factory supervisors, all of whom were shown to have extended durations of utterance compared to non-supervisory personnel).

The following two derived measures, then, should also be true (based on the expectations voiced in the first hypothesis).

2. Psychiatric nurses should, correspondingly, exhibit fewer speech units during the interview than will surgical nurses.

3. Psychiatric nurses should utilize more of the combined interviewer-interviewee talk-time (percentage relative talk-time) than will the surgical nurses.

4. Psychiatric nurses should respond to the interviewer's preceding comment or question with a longer reaction time (latency) than do surgical nurses. Part of the basis for this prediction lies in the nature of psychotherapeutic technique. It is a well recognized tactic by the therapist to remain silent following the patient's last comment. This is done to "encourage" the patient to continue talking, or to insure the therapist against undue interruption of the patient's speech. Therefore, it seems reasonable to assume that the psychiatric nurses will reflect this "conditioning" in the standardized interview and will achieve longer latencies than the surgical nurses. This is borne out by examination of Table 4 in Matarazzo, Wiens and Saslow (18). In this paper which studies the learning and teaching of psychotherapy skills, the student interviewers

lengthened their mean latency by 100% from the first interview (without prior instruction in psychotherapy techniques) to the second interview (which followed a brief course of instruction). In addition, studies by Wiens, Matarazzo, Saslow, Thompson and Matarazzo (28), and Matarazzo, Matarazzo, Saslow and Phillips (17), have shown a small but consistent tendency for individuals who talk with long speech units to have somewhat longer latencies than those who speak in shorter utterances.

5. Psychiatric nurses should interrupt the interviewer less frequently than will surgical nurses. The evidence supporting this hypothesis is the following. Wiens, Saslow and Matarazzo (31) offer evidence showing that as latencies increase, interruptions decrease. That is, there appears to be an inverse relationship between length of latency and the number of interruptions made by an individual. If the fourth hypothesis is true, it can readily be seen that psychiatric nurses should interrupt the interviewer less frequently than their surgical counterparts. Of further interest is the previously quoted psychotherapy training study by Matarazzo, Wiens, and Saslow (18). Examination of Table 4 in that study demonstrates a dramatic drop in the number of interruptions made by the student interviewers from the first to the second interview (following a brief period of training in psychotherapy techniques). This kind of effect (along with others reported in that study) can be interpreted as enabling the patient to more smoothly communicate his story to the interviewer (or therapist). Psychiatric nurses then, could be expected to be "sensitive" to the disturbing effect on the patient of frequent interruptions of his speech and to avoid such verbal behavior. This "sensitivity" could be expected to generalize beyond the confines of the psychiatric ward and thereby influence that aspect of the psychiatric nurse's speech behavior as seen in

the standardized interview.

In summary, then, this study investigated temporal interaction characteristics as they were reflected in a task- or person-orientation in nursing. Specifically, a group of 20 surgical nurses (seen as task-oriented) and a group of 20 psychiatric nurses (seen as person-oriented) were compared on variables related to non-content verbal behavior in the standardized interview. Of interest were the frequency and/or duration of speech and silence units, interruptions, and derived measures.

Method

One feature of this study which differs from previous investigations of interview speech behavior carried on at this institution is that of conducting the interviews apart from the medical school setting. That interview interaction data obtained from a tape-recording of an interview is comparable to that collected by scoring the same interview "live," has been demonstrated (30). However, an additional element of standardization is gained when all experimental interviews are conducted in the same physical setting (i.e., same room, same lighting, same furniture, etc.). This has been the procedure in the past but, because of the sample requirements, namely the need for large groups of both psychiatric and surgical nurses, it was necessary to go beyond the confines of the medical school. Therefore, it was not possible to standardize these additional aspects of the study as has been done previously.

Apparatus

All 40 individual interviews reported in this study were tape-recorded with a Wollensak 3M Tape Recorder. At a later time, the tapes were replayed and scored with the Interaction Recorder (29). This device is an electro-mechanical instrument which, by means of binary coded punched

paper tape, records when during the interview either person, both persons, or neither person is speaking. The scorer recorded the interview by activating either the interviewer or interviewee "key" of the Interaction Recorder as he listened to the tape. Depression of the appropriate key signifies the initiation of a speech unit by that individual and release of the key indicates its completion. The silence preceding the onset of the subsequent speech unit is also recorded. When both interview participants are talking, both keys are depressed; when neither is talking, both keys are "open." This process provides a highly reliable temporal, sequential record of each unit of speech and silence occurring in the interview.

All scoring was done by the author. He was also the interviewer. Although Wiens, Molde, Holman and Matarazzo (30) showed that the interviewer could serve reliably as his own observer in just such a situation, a reliability check was obtained by having a second experienced observer record 5 randomly selected tapes (which included both psychiatric and surgical nurses). Correlations were computed between the author's scoring and the second observer's scoring on the speech, silence and interruption variables (to be described below). For the corresponding interviews, the correlations obtained are as follows. (With the first three variables, the correlation pertaining to the interviewee's score is shown first, with the interviewer's following.) Duration of utterance, $r = 0.98$ and 0.95 ; number of speech units, $r = .99$ and 1.00 ; reaction time (latency), $r = 0.88$, and $r = 0.59$; percent interruptions for the interviewee, $r = 0.95$. (No interruptions by the interviewer were recorded in these five interviews by either scorer.) It should be pointed out that while the correlation obtained on the interviewer latency variable ($r = 0.59$) is considerably lower than the other correlations shown, for the purpose of this study, it represents an acceptable

level of comparability. A complete discussion of this problem is presented in Wiens, Molde, Holman and Matarazzo (30). These correlations serve as additional verification that the recording of speech and silence units from the interview is a highly reliable and reproducible, almost mechanical procedure (30).

Subjects

A total of 40 registered nurses employed at the Oregon State Hospital, the Oregon State Tuberculosis Hospital, and the Multnomah County Hospital served as interviewees for this study. Only staff nurses were interviewed since Wiens, Matarazzo, Saslow, Thompson and Matarazzo (28) have shown that supervisory nurses and head nurses exhibit interaction characteristics which are different from those of staff nurses. The entire population of full-time staff psychiatric nurses (N=20) at the Oregon State Hospital was interviewed. In addition, interviews were obtained with all operating room nurses (N=2) and surgery ward nurses (N=4) at that hospital. At the Tuberculosis Hospital, all the operating room nurses (N=2) and surgery ward nurses (N=5) were interviewed. At Multnomah County Hospital interviews were conducted with all the operating room nurses (N=6) and one surgery ward nurse*. The nurses were individually interviewed whenever they could be scheduled, depending on day off, illness, work load, etc. Each interview was conducted at the particular hospital (and often in the actual work setting) in which each nurse was employed. A small room for interviewing, free from noise and distractions, was readily found in each hospital. The tape-recorder was operated in full view of each nurse.

*The surgery ward nurse was selected at random from a list of all the surgery ward nurses employed at Multnomah County Hospital in order to complete the sample of surgical nurses.

Prior to the interview each nurse was informed that she would be involved in a "communications" research project which had no connection with her job or the hospital, that confidentiality would be observed, and that her participation was voluntary.

A comparison of the interviewees on some personal-social variables is shown in Table 1. The average psychiatric nurse interviewed for this study is about 45 years old, has a nursing diploma, is married, and has been employed in her present position for about 4.5 years. The average surgical nurse is 39 years old, has a nursing diploma, is married and has been in her present position for 2.5 years. t-tests revealed that the average psychiatric nurse had been employed significantly longer at her present position than had the average surgical nurse ($t = 2.16, p = .05$). However, the two nurse groups did not differ significantly with regard to age. Although not shown in Table 1, there were no significant differences between the ward nurses and operating room nurses making up the surgical nurse group on the variables of age and length of employment.

Interviewer

As was mentioned, the author, a 28 year old fifth year medical student finishing his combined MD-MS degrees, conducted all the interviews included in this study. At the time of the interviews, only the name of the nurse and her nursing job were known to the interviewer. The particular form of the standardized interview (to be described below), which was used in this experiment, was learned by conducting several practice interviews and, in addition, conducting a series of 19 such interviews which were included in a previously cited study (30).

Procedure

If the interview is to be used as a research tool in assessing

Table 1

Personal Characteristics of Two Groups of Nurse Interviewees

Characteristic	Psychiatric Nurses N=20	Surgical Nurses N=20
Age:		
Mean	44.6 years	39.1 years
Sigma	11.8	13.8
Limits of Range	23 to 64	22 to 61
Education:		
Diploma	16	19
Bachelor's Degree	4	1
Marital Status:		
Married	13	8
Single	4	7
Widowed	2	5
Divorced	1	0
Years Employed at Present Position; (At time of interview)		
Mean	4.6	2.4
Sigma	4.1	2.0
Limits of Range	0.1 to 14.8	0.1 to 6.8

temporal interaction characteristics, it has been found necessary to standardize certain aspects of the interviewer's own speech and silence durations because of the profound influence which they have upon the interviewee's verbal output (15). That is, results obtained by one interviewer can be compared with those obtained by others who may be interviewing the same or different subjects, only when each interviewer limits his speech behavior in certain prescribed ways. If this is done, striking consistency of verbal interaction patterns is shown by any given individual if he is interviewed as much as months apart by the same or different interviewers (26).

In this study, then, the form of the standardized interview was identical to that previously employed in several studies, as well as with a control group of civil service applicants (15 , Figure 11). In essence, it has the outward appearance of a typical employment-type interview. While it would not be apparent to a naive observer, however, the interviewer is using the following rules in guiding his verbal interactions. He uses only verbal communication (no head nods, gestures, etc.); he speaks in 5-second utterances; he does not interrupt the interviewee; and he responds to the interviewee's last comment within one second after its completion. All interviews are kept to approximately 30 minutes in length. Although past experience has indicated that the actual content of the interview discussion is relatively unimportant in assessing the temporal interaction variables (to be described below) so long as highly charged or emotional topics are avoided, the following format for partial content standardization was used. Each nurse was asked, initially, to describe some of her daily nursing duties and, through open-ended non-directive interviewing techniques, was encouraged to elaborate on some of the aspects

mentioned. Usually this rather general topic occupied approximately 50-70% of the interview duration. Cues for other topics to discuss, following the initial nursing discussion, were taken from the nurse's previous comments and were pursued in similar fashion until the completion of the interview. A relaxed interview atmosphere prevailed.

Measures of the following interview interaction variables were obtained from the 40 scored interviews:

1. Duration of Utterance: the average length (in seconds) of each participant's speech units is computed by dividing the total duration of each person's speech by the number of speech units ascribed to him.

2. Number of Speech Units: the number of times each participant speaks. Obviously, in scoring tape-recorded interviews, it is impossible to include acts of non-verbal communication (i.e., gestures, frowns, etc.) as "speech" units but past experience has indicated that this form of communication within the standardized interview is not a significant fraction of the temporal interaction variables. A more precise definition of a scored speech unit is given in Wiens, Molde, Holman and Matarazzo (30).

3. Percentage Relative Talk-Time: that proportion of the total amount of speaking time attributable to the individual participants, is calculated by dividing the total duration of interviewee (or interviewer) speech by the total of both interviewee and interviewer speech duration (thereby excluding mutual silences, and unfilled time).

4. Reaction Time (Latency): that interval of time separating a speech unit from its immediate predecessor (i.e., the length of time separating the end of the interviewer's speech unit and the beginning of the interviewee's succeeding comment).

5. Percentage of Speech Units That are Interruptions: that

proportion of interviewee (or interviewer) speech units which are entirely or partly an interruption. (An interruption is scored when one interview participant begins a speech unit while the other participant is talking.) This measure is calculated by dividing the number of interruption units by the total number of speech units for that individual.

The statistics used to describe that data collected were the mean, standard deviation, limits of range, Pearson product-moment coefficient of correlation, and the t-test for non-correlated means as described in McNemar (19).

An alpha level of .05 was accepted as indicating statistical significance. The one-tailed table of t-values was used for those comparisons concerned with speech, silence, or interruption differences existing between the two nurse groups for the reasons stated under hypotheses 1, 4 and 5 in the introduction.

Results

Before proceeding to the major findings of this study, it seems necessary to examine the two surgery subgroups (surgery ward nurses and operating room (O.R. nurses) for any temporal interaction differences which might preclude their combination to form the larger group.

The data in Table 2 make possible direct comparison of the surgery ward nurse subgroup and the O.R. nurse subgroup comprising the sample of surgical nurses interviewed in this study. It may be noted that the two subgroups had highly comparable mean values for the following variables: number of speech units, duration of utterance, percentage relative talk-time, and percentage of interruption speech units. On only one of the variables, mean reaction time, did the two subgroups demonstrate a statistically significant difference. O.R. nurses had a longer mean reaction

Table 2

Characteristics of Speech Duration, Speech Latency, and Speech Interruption
for Surgery Ward Nurses and Operating Room Nurses

Characteristic	Surgery Ward Nurses N=10	Operating Room Nurses N=10	t	p*
Duration of Utterance (seconds)				
Mean	32.09	32.03	0.00	
Sigma	12.44	19.29		
Limits of Range	16.99 to 53.89	11.82 to 70.96		
Number Speech Units				
Mean	51.40	55.70	0.51	
Sigma	15.01	22.00		
Limits of Range	29 to 78	24 to 96		
Percentage Relative Talk-Time				
Mean	86.52	83.74	1.06	
Sigma	3.92	6.40		
Limits of Range	78.26 to 92.10	72.62 to 92.71		
Reaction Time (Latency - seconds)				
Mean	0.44	0.68	2.42	.05
Sigma	0.15	0.27		
Limits of Range	0.22 to 0.70	0.42 to 1.35		
Percentage Interruption Units				
Mean	33.51	27.33	1.00	
Sigma	14.16	13.45		
Limits of Range	15.00 to 53.33	7.29 to 40.58		

*Based on two-tailed test.

time (0.68 seconds) than did surgery ward nurses (0.44 seconds, p of .05).

Turning to the remaining four variables shown in Table 2, the means indicating the number of speech units attributable to each group are quite similar (ward nurses mean = 51.40; O.R. nurses mean = 55.70). Sigmas and ranges of scores for the two groups on this variable were comparable (sigmas of 15.01 and 22.00; ranges of 29 to 78, and 24 to 96, for ward and O.R. nurses respectively). The duration of utterance variable showed almost identical means for the two nurse groups. Ward nurses achieved a mean of 32.09 seconds per utterance, and the O.R. nurses showed a corresponding value of 32.03 seconds per utterance. This close (almost identical) behavior by the two groups on this variable is striking. It is apparent also that, while achieving almost identical means on this variable, the variation of individual scores appears to be somewhat greater in the operating room nurses (O.R. nurses: S.D.=19.29, range of scores, 11.82 to 70.96; ward nurses: S.D.= 12.44, range of scores, 16.99 to 53.89). Regarding interruptions, the ward nurses and O.R. nurses again showed comparability between them (means of 33.51 and 27.33, respectively, for percentage interruption units). The last measured variable, percentage relative talk-time, indicates comparability between the two groups (means of 86.52 and 83.74; sigmas of 3.92 and 6.40; and range limits of 78.26 to 92.10 and 72.92 to 92.71, for ward and O.R. nurses respectively).

It seems reasonable, then, to combine the two subgroups (ward and operating room nurses) to form a surgery nurse sample in view of the evidence which shows only one significant difference (at .05 level) among the 5 variables, (that between the reaction time means of the two subgroups).

The significant findings of this study are shown in Table 3. A variable of primary importance in past studies, duration of utterance, is

Table 3

Characteristics of Speech Duration, Speech Latency, and Speech Interruption
for Two Groups of Nurse Interviewees

Characteristic	Psychiatric Nurses N=20	Surgical Nurses N=20	t	p*
Duration of Utterance (seconds)				
Mean	41.94	32.06	1.70	.05
Sigma	20.43	15.85		
Limits of Range	18.67 to 85.74	11.82 to 70.96		
Number Speech Units				
Mean	43.20	53.55	1.91	.05
Sigma	15.83	18.46		
Limits of Range	20 to 68	24 to 96		
Percentage Relative Talk-Time				
Mean	87.57	85.11	1.71	.05
Sigma	4.91	5.40		
Limits of Range	78.19 to 94.60	72.62 to 92.71		
Reaction Time (Latency - seconds)				
Mean	0.96	0.57	3.00	.005
Sigma	0.54	0.24		
Limits of Range	0.35 to 2.29	0.22 to 1.35		
Percentage Interruption Units				
Mean	22.46	30.43	2.03	.025
Sigma	11.00	13.79		
Limits of Range	6.35 to 45.83	7.29 to 53.33		

*Based on one-tailed test.

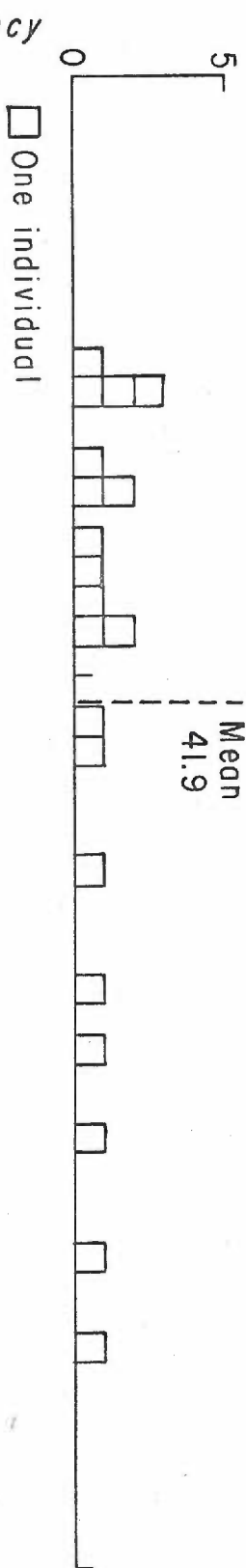
shown first. It is apparent that the psychiatric nurses talked on the average a longer time whenever they spoke than did surgical nurses (means of 41.94 and 32.06 respectively, $p = .05$). The variation about the means was fairly similar, with psychiatric nurses showing a sigma of 20.43, with a corresponding value of 15.85 for the surgical nurse. It is further evident that (corresponding to the longer psychiatric nurses' mean and the shorter surgical nurses' mean) it was a psychiatric nurse who contributed the longest individual mean duration of utterance for any of the 40 nurse interviewees, whereas the shortest individual mean was attributed to a surgical nurse (individual means of 85.74 and 11.82 respectively). A frequency distribution of the individual means for this variable, which was contributed by each of the 40 nurse interviewees, is shown in Figure 1. Although considerable overlap is apparent between the two groups, only 5 surgical nurses (25% of the surgery sample) exceeded the group mean for duration of utterance for the psychiatric nurses (mean = 41.90). In contrast, 12 of 20 psychiatric nurses (60%) exhibited mean durations of utterance which surpassed the grand mean of 32.1 which characterized the surgical nurses. Also of interest is the rather grouped distribution of scores for both nurse groups which appear in the lower ranges of the total distribution. However, those psychiatric nurses who exceeded the grand mean of 41.9 for their own group present a pattern of distribution resembling a continuum of scores, whereas 4 of the 5 surgical nurses who surpassed the psychiatric nurses' grand mean have scores grouped about the 50-second mark. The one exception is the surgical nurse who spoke with a 71.0 second average utterance. She clearly does not "fit" the pattern of the other 19 surgical nurses, as shown in Figure 1.

A reflection of the differences existing between the two nurse

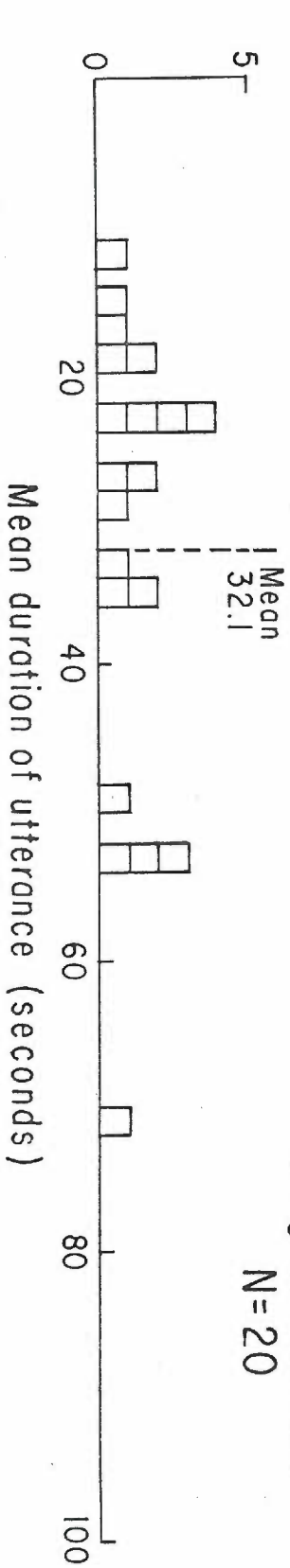
FIGURE 1. FREQUENCY DISTRIBUTIONS:
MEAN DURATION OF UTTERANCE FOR TWO GROUPS
OF NURSE INTERVIEWEES

FREQUENCY DISTRIBUTION: MEAN DURATION OF UTTERANCE FOR TWO GROUPS OF NURSE INTERVIEWEES

Psychiatric Nurses
N=20



Surgical Nurses
N=20



groups on the duration of utterance variable is seen in the number of speech units averaged by each group. That is, as the surgical nurses talked with shorter utterances in the interview, they also spoke more frequently (mean = 53.55) than did their psychiatric colleagues (mean = 43.20, $p = .05$). Although the variability about the two means is quite similar (sigmas of 18.46 and 15.83 for surgical and psychiatric nurses), just as with the preceding variable, a surgical nurse spoke with the greatest number of speech units (96 units) in any of the 40 reported interviews whereas a psychiatric nurse spoke with the fewest (20 units). In addition, the proportion of the total interviewee-interviewer talk-time (percentage relative talk-time) utilized by the psychiatric and surgical nurses also reflects the findings with the first variable (duration of utterance). Not unexpectedly, the psychiatric nurses, who talked less frequently but with longer utterances than did the surgical nurses, were found to use a significantly greater percentage of the interviewee-interviewer talk-time than did surgical nurses (means of 87.57 and 85.11 respectively, $p = .05$). As was the case with the two preceding variables, a psychiatric nurse achieved one of the extreme scores (94.60% of the combined talk-time utilized) and a surgical nurse the other (72.62% of the combined talk-time utilized).

It can be seen, then, from the discussion of the preceding three variables that hypotheses 1, 2 and 3 (as stated in the introduction) have been verified.

Moving to the next variable, reaction time, examination of Table 3 shows a rather large difference between the two nurse groups in their latency behavior. Psychiatric nurses responded to the interviewer's comments and questions after a considerably longer delay than did surgical

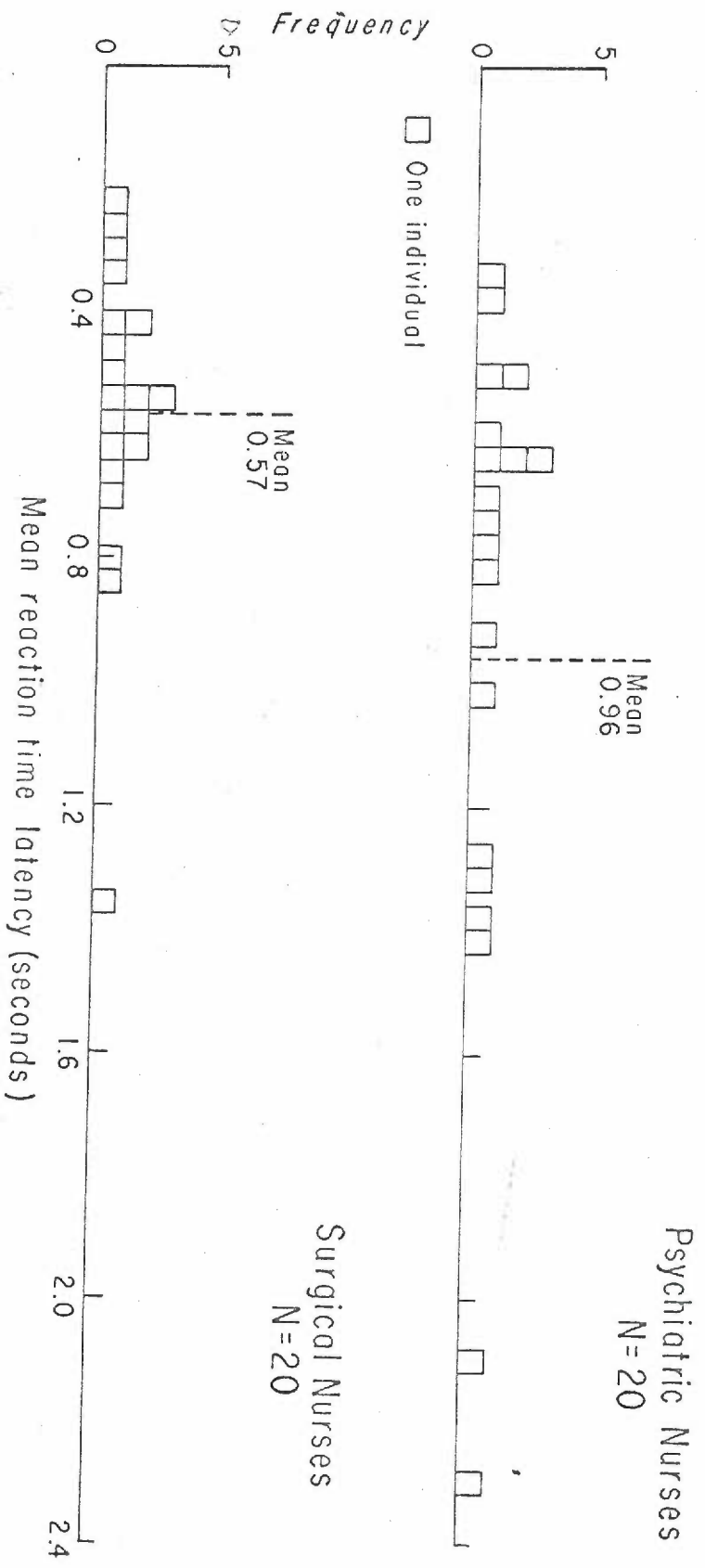
nurses (means of 0.96 and 0.57 respectively, $p = .005$). The psychiatric nurses also exhibited a considerably greater variation (sigma of 0.54) and range of scores (0.35 to 2.29) than did the surgical nurses who showed the corresponding values (sigma of 0.24, range limit of 0.22 to 1.35). It can again be noted, however, that a surgical and psychiatric nurse displayed the most extreme scores as with the previous three measurements. A psychiatric nurse produced the longest latency recorded for any nurse (2.29 seconds) and a surgical nurse the shortest (0.22 seconds). More revealing is the frequency distribution of individual mean latencies for all nurse interviewees as shown in Figure 2. Visually demonstrated are the marked differences between the two nurse groups on this variable which is not evident from Table 3 alone. Specifically, only 1 surgical nurse (5% of the surgery sample) exceeded the mean latency (0.96 seconds) for the psychiatric nurse group. Only 4 psychiatric nurses (20% of the psychiatry sample) have shorter latencies than their surgical counterparts' mean of 0.57 seconds. In short, the overlap between the two nurse groups on this variable is considerably less than with the duration of utterance (shown in Figure 1). *

Considering the last interaction variable, percentage of speech units as interruptions, Table 3 demonstrates that a significant difference existed in the interview interruption behavior which characterized the two groups. The differences in the means of the psychiatric and surgical groups (22.46 versus 30.43) was significant at the .025 level. The corresponding variation was similar (sigmas of 11.00 and 13.79) but again, a psychiatric nurse contributed one range limiting score (6.35%), across the two groups, and a surgical nurse the other (53.33%). In other words, a psychiatric

*Because of the skewness which all latency data tend to exhibit, a non-parametric statistic, the Mann-Whitney U test, was applied to this data (in addition to the t-test). The following values were obtained: $U=93.5$, $p = .01$ (one-tailed test).

FIGURE 2. FREQUENCY DISTRIBUTION:
MEAN REACTION TIME LATENCY FOR TWO GROUPS
OF NURSE INTERVIEWEES

FREQUENCY DISTRIBUTION: MEAN REACTION TIME LATENCY FOR TWO GROUPS OF NURSE INTERVIEWEES



nurse interrupted the interviewer the fewest times (6.3%), percentage-wise, when she spoke, whereas a surgical nurse began 53.3% of her speech units as interruptions of the interviewer. Figure 3 presents a frequency distribution of all individual percentages for all nurses on this variable. It can be seen that, of 20 surgical nurses, 13 (or 65%) had mean values exceeding that of the psychiatric nurse group (mean = 22.4). Correspondingly, 16 of 20 psychiatric nurses (80%) achieved mean percentage interruption scores which failed to reach that mean which characterized the surgery nurse group (mean = 30.4). In short, 80% of the psychiatric nurses scored below the mean of the surgical nurses whereas 65% of the surgical nurses exceeded that corresponding mean for the psychiatric nurses.

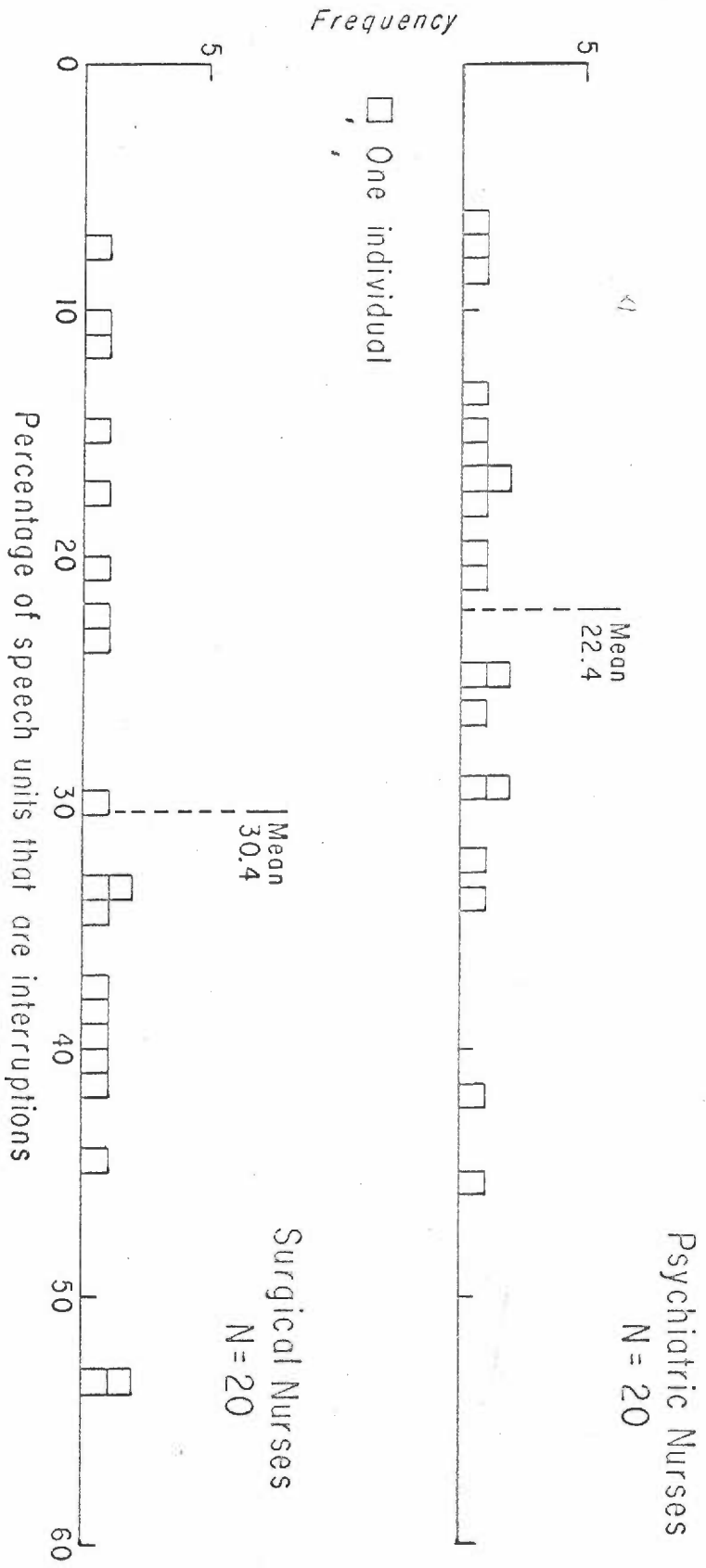
The differences, then, which have been shown to exist between the psychiatric and surgical nurses on the variables -- reaction time (latency) and percentage interruption units -- substantiate hypotheses 4 and 5 (as described in the introduction).

Table 4 shows the comparability of the interview conditions for each group of nurses. The interviewer's speech, silence, and interruption behavior* during the interviews is shown for both nurse groups. To dispense with the more easily described variable first, the interruption behavior of the interviewer (showing 0.10% interruptions, on the average, for each group) is a result, not of a very few interruptions scattered throughout many interviews, but, of a single interruption in two separate interviews, one each with a surgical nurse and a psychiatric nurse. In each of the two interviews, the per cent of speech units which were interruptions by the interviewer was identical. Therefore, the means shown for the interviewer's interruption behavior with the two nurse groups were the result of two specific instances and do not reflect the lack of interviewer interruptions

*Since earlier research has shown that interviewee verbal behavior is subject to marked influence by the interviewer's own speech behavior, the author felt obligated to do a detailed set of analyses of his own (interviewer) behavior in order to show whether or not the differences in psychiatric versus surgical nurses shown in previous tables and figures, was a function of unwanted differences in his own interviewing behavior.

FIGURE 3. FREQUENCY DISTRIBUTION:PERCENTAGE
OF SPEECH UNITS THAT ARE
INTERRUPTIONS FOR TWO GROUPS
OF NURSE INTERVIEWEES

FREQUENCY DISTRIBUTION: PERCENTAGE OF SPEECH UNITS THAT ARE INTERRUPTIONS FOR TWO GROUPS OF NURSE INTERVIEWEES



in nearly every interview.

Moving to the interviewer's duration of utterance, it is seen to be essentially identical with both groups (means of 4.98 versus 5.02). The corresponding variations (sigmas of 0.40 and 0.69) and ranges of scores (4.46 to 5.56; and 4.00 to 6.44) for psychiatric and surgical nurses respectively, however, show some variability about those means. If this degree of precision and accuracy by the interviewer in achieving the desired 5-second utterance is surprising to the reader, he is referred to Figure 4 in Matarazzo, Wiens, Matarazzo and Saslow (14). This Figure shows that in the Head Nods Study (which is one of several studies listed in this Figure), for instance, the interviewer achieved identical grand means of 5.1 seconds for his duration of utterance in each of the three 15-minute periods of the interview for 20 different interviewees. This he did, even though introducing an experimental variable (head nodding) during the mid 15-minute period (which obviously failed to "shake him from his stride"). Inspection of the interviewer's mean duration of utterance for the next lower study (shown in Figure 4 in Matarazzo, et al.; that of Head Nods: Replication) shows an almost comparable performance (grand means of 5.1, 5.0, 5.0). Perhaps an even more incredible display of accuracy and precision, by 4 interviewers instead of 1, is shown in Figure 5 in Matarazzo, Wiens and Saslow (15). This Figure summarizes 4 different interviewers, interviewing 5 groups of individuals of differing psychiatric classifications, totalling 177 interviews. For the 5 groups, the interviewer's grand mean for duration of utterance is reported as: 5.0, 5.0, 5.0, 5.0 and 5.0. Considering the idiosyncratic verbal differences which must have existed among the 4 different interviewers, to say nothing of idiosyncratic interviewee characteristics interacting with the interviewer's,

this interviewer "showing" must stand as solid evidence to support the contention that it is possible for an interviewer to consistently achieve the desired average duration of utterance. (As a sidelight, the average duration of utterance achieved by the author in a previously quoted study (30), under differing observation conditions and recorded by different observers, were shown to be 5.1, 5.1 and 5.0 seconds, as recorded by three different observers across 19 interviews.)

With regard to the interviewer's silence behavior, again, almost identical means were achieved with each nurse group (0.45 and 0.46 for psychiatric and surgical nurses respectively). Variability, as reflected in sigma and range of scores was minimal (sigmas of 0.08 and 0.09; ranges of 0.33 to 0.58, and 0.29 to 0.66). Although it is, perhaps, not quite as easy to document this aspect of interviewer "consistency," some highly suggestive evidence is available. Table 3 in Matarazzo, Wiens, Saslow, Allen and Weitman (16) summarizes the interviewer and interviewee latency behavior for each of five different groups of interviewees (four experimental groups and one control group). The same interviewer was used with four of the five groups. (The Head Nod: Crossvalidation Study, which is listed second in Table 3, was done by a different interviewer.) The latency calculations in those five listed studies were done somewhat differently than was the case with the two nurse groups reported in this study. Those five studies consisted of 20 separate interviews per study, with each interview being divided into three 15-minute segments (or a total of 45-minutes of length for the entire interview). The first and third segments of those interviews were identical in format with the 30-minute interview conducted with the two nurse groups in this study. The mid-segment of those interviews (excluding the control group), summarized in

Table 4

Characteristics of Speech Duration, Speech Latency, and Speech Interruptions
for the Interviewer with Two Groups of Nurse Interviewees

Characteristic	Interviewer with Psychiatric Nurses N=20	Interviewer with Surgical Nurses N=20	t	p
Duration of Utterance (seconds)				
Mean	4.98	5.02	0.22	
Sigma	0.40	0.69		
Limits of Range	4.46 to 5.66	4.00 to 6.44		
Reaction Time (Latency - seconds)				
Mean	0.45	0.46	0.27	
Sigma	0.08	0.09		
Limits of Range	0.33 to 0.58	0.29 to 0.66		
Percentage Interruption Units				
Mean	0.10	0.10	0.00	
Sigma	0.63	0.63		
Limits of Range	0 to 2%	0 to 2%		

Table 3, was used to introduce the experimental variable (i.e., head nodding, or saying "mm-hmm" as the interviewee talked). No change in the latency behavior of the interviewer, however, was to accompany the introduction of that experimental variable. In other words, the interviewer was directed to respond to the interviewee's comments in less than a second for the entire interview. Inspection, then, of the interviewer's grand mean latency values reported for each of the 3 subperiods of the interviews, for the 4 groups of interviewees which were interviewed by a single interviewer, shows that the maximum spread between the interviewer latency means within any group is 0.07 seconds. That, in itself, is fair evidence of interviewer consistency in latency behavior. However, if one simply combines the grand means in each reported study to produce a grand mean representing the interviewer's latency behavior for the entire interview (rather than for subsegments within the interview), the grand means resulting, show only a 0.01 seconds spread between the grand means for all 4 studies. In other words, the interviewer achieved a grand mean latency of 0.40 for one study, 0.39 for another, and 0.40 and 0.40 for the remaining two studies. The interviewer latencies reported in this study of psychiatric and surgical nurses were calculated as grand means for all interviews as a whole (not subdivided) and the resulting spread between the two values is 0.01 seconds, which equals that obtained by using a similarly calculated grand mean latency for one interviewer with 4 groups of interviewees (not just two). It is clear then, that interviewer consistency is a reality with latency behavior just as with duration of utterance.

Although not shown in Table 4, in attempting to achieve a 30-minute length for each interview, the interviewer conducted interviews with the 20 psychiatric nurses with an average duration of 29.6 minutes (sigma of

0.9, range of lengths from 28.1 to 30.9). Although required to shorten two of the interviews because of work demands upon the nurse, the average length of surgical nurses' interviews was 29.1 minutes (with a sigma of 1.7 and a range of scores from 24.5 to 32.3). It is evident from this that the length of all interviews (with the two exceptions) was very similar.

It should be clear then, that the interviewer's speech, silence and interruption behavior was comparable for both nurse groups.

Before proceeding to the discussion section, some suggestive correlations were found relating age, percentage interruptions, and latency. Among surgical nurses, age correlated .64 with interruptions ($p = .01$) and $-.54$ with reaction time ($p = .05$). Among psychiatric nurses, age correlated .41 with percent interruptions ($p = .06$) and $-.29$ with reaction time. The correlations between reaction time and percent interruptions for both nurse groups showed $-.60$ ($p = .01$) for the psychiatric nurses and $-.59$ ($p = .01$) among the surgical nurses. The correlations among the other temporal interaction variables were not remarkable. The significance of these correlations will be discussed below.

Discussion

In examining several hypotheses which might explain the absence of a unique and exclusive "nursing personality" (as measured by the Edwards Personal Preference Schedule), Caputo and Hanf (2) suggest that, "Further research in this area might investigate the possibility that personality need patterns are related to specific tasks within a vocation rather than to broad vocational designations such as "nursing" (2, p. 433).

This study has, in a sense, done that. It has shown that psychiatric and surgical nurses, representing two quite different vocational

settings within nursing which can be characterized as being either person- or task-oriented, exhibit different temporal interaction characteristics in a standardized interview. That is, differences between the two nurse groups in terms of how they talk (rather than what they say) have been found. It will be recalled that introductory comments to this study pointed out that the non-content aspects of any individual's speech are highly reliable over time and that this behavior can be reasonably viewed as a part of the individual's "personality." In addition, Matarazzo, Wiens and Saslow (15) and Matarazzo, Wiens, Matarazzo and Saslow (14) show that temporal speech behavior has meaning beyond the laboratory setting.

The next question, quite properly, might inquire about the meaning of these observations. One of the interests of investigators in the field of verbal behavior has been in trying to discern what part of that observed behavior is due to innate or idiosyncratic patterns which have been ongoing in an individual for some time, and what influence or interplay do environmental factors (such as occupational demands for instance) have in speech behavior. Weintraub and Aronson state flatly that, "Few would deny that the manner in which an individual speaks is idiosyncratic" (32, p. 180). However, they also point out, from their own study and others, that environmental influences can produce alterations in observed verbal behavior. For instance, psychotherapy of a successful nature, is felt by them to produce alterations in verbal behavior which accompany the occurring personality adjustments. (Matarazzo, Wiens, Matarazzo and Saslow (14) have only recently described a 4-year study of temporal verbal behavior for both patient and therapist in the psychotherapy setting.)

The findings in this study are viewed by the author as supporting the contention that environmental influences, particularly the verbal requirements made upon an individual in his occupational duties, are forceful

in determining the observed verbal pattern. A review, particularly of the documentation of the hypotheses presented in the introduction, will make clear that, although speculations about factors which could be felt to influence the temporal verbal behavior of surgical nurses is sparse (and primarily intuitive), inferences about the probable verbal interaction patterns of psychiatric nurses can be (and were) drawn from existing data. Of particular significance in this regard are studies such as that by Matarazzo, Wiens and Saslow (18) which explore the effects of training in psychotherapy skills upon the actual performance by the student-interviewer in the interview (or therapeutic) setting. Observing such changes as a 100% increase in speech latency by the student-interviewers from the "naive" first series of interviews to the second series of interviews (which followed 8 weeks of intensive instruction in psychotherapy skills) is very revealing. When that change is accompanied by a drop in the mean percentage interruption units by the student-interviewers from 27% to 10% under the same circumstances, it is impossible to avoid the conclusion that training (and not some fortuitous adjustment in an innate or idiosyncratic "baseline") in the specifics of psychotherapy interviewing techniques dramatically affected the temporal interaction characteristics of the interviewer's speech.

It is very interesting, however, to speculate about what the student-interviewer's performance would be, if, immediately after the 8 weeks training program, he interviewed not only the assigned series of known psychiatric patients but, in addition, an equivalent series of non-psychiatric patients (i.e., his fellow classmates, etc.). It would then be possible to get some measure of the "specificity" of the training program. That is, would the observed temporal interaction changes (such as increased latencies

and decreased interruptions) which the student-interviewer demonstrated with known psychiatric patients only, be equally evident in a non-psychiatric (or control?) group? These measurements would also provide an estimate of the (short term) generalization of the changes produced in the interviewer's behavior.

These same measurements made at a time (or times) far removed from the 8 weeks training program would also be very illuminating for the following reason. By having the student-interviewer conduct a similar series of interviews with both known psychiatric patients as well as non-psychiatric interviewees long after completion of the training program, an estimation of any long term generalization, and "specificity" could be obtained. In addition, an estimate of the permanence of the changes initially seen in the student-interviewer's speech could be assessed. For instance, if the student-interviewer finds that longer latencies and shorter interruptions enhance his conversational abilities in day-to-day communications, he might well show not only a retention of those changes, but an augmentation in their uses. The converse could equally be true. That is, he may have proceeded to disregard the learned changes in his verbal behavior, and no remnants may be left after some time has elapsed.

The purpose of the preceding discussion was to assist in pointing out that, although Matarazzo, Wiens, and Saslow (18) did not concern themselves with psychiatric nurses in their study, the common linkage between their findings and the hypothetical derivations concerning the psychiatric nurses' interruption and latency behavior is the psychotherapeutic interviewing factor. In addition, since the evidence is so strongly suggestive of learned changes in temporal interaction behavior of the interviewer (or therapist) as he becomes acquainted with

psychotherapeutic interviewing techniques, it is not a great jump to suppose that psychiatric nurses would also learn those changes as a natural result of working with psychiatric patients. Furthermore, because this is a learning process, it can be assumed that generalization should occur to some degree. As was shown in this study, these predictions were verified.

Returning to the surgical nurses, it was shown that they do differ from psychiatric nurses in the predicted directions. However, as previously indicated, the kind of direct, or indirect evidence (such as Matarazzo, Wiens and Saslow (18) provide for the psychiatric nurse) which would independently predict their expected verbal patterns in a standardized interview -- apart from contrasting them with psychiatric nurses -- is scarce. The implications which the task-versus person-orientation concept of Raskin, Baruchow and Golob (24) has within it are helpful. Additional evidence from EPPS studies and other sources is detailed in the introduction and will not be discussed further.

It seems likely that few investigators will attempt to study the temporal verbal behavior of surgical nurses. This is probably because surgical nurses, as Raskin, Baruchow and Golob (24) imply, are seen as individuals whose primary "tools of trade" are the highly trained, technical skills which they possess and use in their daily activities. These activities, in addition, may often be done with minimal verbal output by the surgical nurse. Yet, in glancing through almost any nursing journal, numerous articles concerned with the importance of nurse-patient communications are invariably present. The nursing profession recognizes a need in this area. This study, as well as that of Wiens, Matarazzo, Saslow, Thompson and Matarazzo (28), has demonstrated that

temporal interaction patterns differ in both a "vertical" and "horizontal" sense within nursing. Specifically, nurses in various administrative levels show differing verbal outputs ("vertical" sense), and different nursing specialists ("horizontal" sense) manifest contrasting temporal verbal styles.

It seems likely, then, that further research in verbal interaction (both content and non-content) in nursing is warranted. Furthermore, it seems feasible that, as student-interviewers were trained in techniques of psychotherapeutic interviewing, so could nurses be instructed in the techniques of influencing interviewee (or patient) speech by interviewer (or nurse) tactics. A description of these maneuvers, which could potentiate nurse-patient communications with regard to temporal speech factors, is contained in Matarazzo, Wiens and Saslow (15). It is a simple fact that verbal output is necessary to carry content to the nurse's ears. Any methods of facilitating that transaction could usefully be applied.

However, it should not be assumed that each and every specialty within nursing (obstetrics, public health, pediatrics, etc.) could be expected to exhibit different and differentiating temporal verbal interaction patterns. Certainly there are vocational settings in nursing (and elsewhere) where the demands on the nurses' skills require both verbal and manual facility. One striking example would appear to be that of the nurse working in the private office of a physician, who must meet patients, keep appointment books, assist the physician with treatment procedures, etc. Clearly, both kinds of skills would be essential to the proper performance of that job. The importance of familiarizing nurses with the experimentally derived and verified techniques for influencing the verbal output of the interviewees (or patients) would still hold true for these

groups of nurses, however.

Turning to a discussion of the specific results of this study, it is clear from Table 3 that psychiatric nurses did speak with a longer duration of utterance, on the average, than surgical nurses. In addition, they spoke less frequently in the interview and utilized more of the combined interviewee-interviewer talk-time than did their surgical counterparts. These results were predicted. Anyone who is familiar with the activities of a busy psychiatric nurse during her day-to-day nursing duties would not find this surprising. A great portion of her time is spent in such activities as meetings, therapy sessions, nurse-physician discussions of ward patients, etc. All of these factors would require considerable verbal activity on the part of the psychiatric nurse. In addition, it is a somewhat more difficult and lengthy process to describe the history or present status of many psychiatric patients compared to surgical (or medical) patients. For instance, a nurse might characterize the status of a surgical patient rather well by telling the physician that, "Yesterday, the patient was afebrile, took in three liters of fluid, ate well, and had no pain. He's doing fine." It would often be considerably more difficult to attempt to characterize the current status of a psychiatric patient, with comparable precision, in 20 words. These kinds of clinical observations, then, in addition to the previously mentioned evidence (listed under the first hypothesis in the introduction), supported the expectation that psychiatric nurses should have a greater verbal output than surgical nurses.

It will be recalled that the psychiatric nurses, as a group, demonstrated considerably longer latencies than their surgical colleagues. Figure 2 (as shown and as described in the preceding section) demonstrates

the minimal overlapping between the two nurse groups on this variable. Some of the above discussion in this section points out why the author believes that this is a behavior difference which has been significantly influenced by the occupational setting in which the two nurse groups work. The same points hold true for interruption behavior by both nurse groups in this study. The evidence, as Matarazzo, Wiens and Saslow (18) have presented it, strongly suggests a learned change in interruption behavior by the psychiatric nurses, as a result of experience with psychotherapeutic interviewing techniques.

Of further interest, with regard to the latency and interruption variables, were interrelationships found between age, percentage interruption units, and latency values. As presented in the preceding section, significant or suggestive correlations between these three factors were as follows: negative correlations between percent interruptions and length of latency; positive correlations between age of the nurse and the percent interruption score for her; and negative correlations between age of the nurse and her latency score. In other words, it appears that: (a) as a nurse's latency shortens, she interrupts the interviewer more frequently, (b) older nurses interrupt the interviewer more frequently than younger nurses, and (c) older nurses have shorter latencies than younger nurses. Wiens, Matarazzo, Saslow, Thompson and Matarazzo (28) found a significant correlation between the ages of head nurses and their percent interruption scores. (No significant correlation was found, however, between age and latency.) Matarazzo, Matarazzo, Saslow and Phillips (17) found a significant negative correlation between the patients' ages and their reaction times (or latencies) in the interview setting. In other words, support for (b) and (c) is obtained from Wiens, et al. and Matarazzo, et al.

Possible explanations for these interesting correlations could include the following. Matarazzo, Matarazzo, Saslow and Phillips (17) suggest that a "poise" factor, which increases with age, may be related. That is, increasing age may provide the individual with more "security" in carrying on his verbal interaction such that he (or she) becomes less reluctant to initiate interactions (shorter latencies) and more inclined to assert himself (or herself) during the interactions (more interruptions). Another partial explanation might lie in a "courtesy" factor which could influence interactions. For instance, the psychiatric nurse, in her psychotherapeutic and counseling endeavors, might learn that by making fewer interruptions of the patient's speech, and by allowing him ample time to finish his statements (longer latencies), facilitation of the nurse-patient communication process is achieved. However, it is true that the trend which suggests that older nurses interrupt the interviewer more frequently, holds for both nurse groups. Therefore a "courtesy" explanation would have to take some account of age. This might be done by supposing (in addition to a "courtesy" factor) a "status" factor as well. That is, older nurses in both nurse groups may tend to interrupt younger associates (and a younger interviewer) more frequently than someone closer to their own age, even though older psychiatric nurses maintain a greater degree of "courtesy" in their interviews than do older surgical nurses. It should also be mentioned that a partial explanation for the negative correlation between length of latency and percent interruptions is a sort of "mechanical" one. As latencies shorten (to the point of being zero latencies) interruptions would be expected to increase. The magnitude of this correlation (-0.60) indicates that something over a third of the observed variance could be accounted for by this explanation.

Finally, before summarizing the results of this study, one further item needs to be mentioned. There is no objective and independent evidence to support the assumption that the psychiatric nurses interviewed in this study actually had a "person-orientation" or that the surgical nurses were really "task-oriented." However, anecdotal material was uncovered during the interviews with both nurse groups which tends to bear out the assumptions. During the course of the interview, it was often asked of the nurse, "What is your feeling regarding the notion that people choose different occupations because of personality reasons?" If this rather general question did not provoke a response, it was rephrased to say, "You are now a surgical (or psychiatric) nurse. What would your reaction be if, tomorrow, you were transferred into - say - a psychiatric hospital (or operating room)?" The very specific nature of this question quite frequently produced comments from the psychiatric nurses such as, "Oh, I could never do that kind of nursing. The patient is always asleep, there's no follow-up contact with the patient after he leaves the O.R., patient contact is minimal I just wouldn't care for it." Surgical nurses, in contrast, would be very likely to say, "I wouldn't care for psychiatric nursing at all. I don't understand those patients, and the chances to use the nursing skills I learned in training would be scarce. To me, a chance to do good basic nursing care is the satisfying part of this job, and that's why I like it." So, at least on the anecdotal level, there is support for believing that many in the two groups of nurses may well have had the "task" or "person-orientation" which other evidence indirectly suggests should be present.

Conclusions

It has been shown from the findings of this study that surgical

and psychiatric nurses exhibited significant verbal interaction differences in a standardized interview. As was predicted, psychiatric nurses had a greater verbal output in the standardized interview, as well as talking fewer times. In addition, they utilized more of the combined interviewee-interviewer talk-time than did surgical nurses. However, the latter group were found to interrupt the interviewer more frequently, and exhibited a shorter reaction time (or latency) in responding to the interviewer's comments than did their psychiatric counterparts. Implications of these findings were discussed.

To account for these observed differences on the basis of occupational (or vocational) demands upon the nurse's verbal behavior seems likely, although, it is not clear what interrelationships exist between innate or idiosyncratic factors and environmental influences on speech behavior, or how they interact.

The findings of this study offer further support for the concept of task- versus person-orientation in nursing. They are also compatible with various "personality" studies done with different kinds of nurses (as reported in the introduction).

Since a cross-sectional approach has demonstrated that hypothesized differences exist in temporal verbal interaction behavior between two different groups of nurses (representing separate vocational settings within nursing), it now seems reasonable to attempt an extended study (over-time) of newly graduated nursing students who enter various specialties within nursing, to determine, if possible, what the factors are (innate or environmental) which influence the verbal interaction patterns as well as how they interact to produce the actual observed verbal behavior.

References

1. Bales, R.F. Role and role conflict. In E.E. Maccoby, T.M. Newcomb and E.L. Hartley (Eds.) Readings in social psychology. New York: Holt, Rinehart and Winston, Inc., 3rd edition, Pp. 437-447.
2. Caputo, D. and Hanf, C. The EPPS pattern and the "nursing personality." Educ. Psychol. Measmt., 1965, 2, 421-435.
3. Chapple, E.D. and Arensberg, C.M. Measuring human relations: An introduction to the study of the interaction of individuals. Genet. Psychol. Monogr., 1940, 22, 3-147.
4. Chapple, E.D. The Interaction Chronograph; its evolution and present application. Personnel, 1949, 25, 295-307.
5. Cohen, S.J., Trehub, A. and Morrison, F.G. Edwards Personal Preference Profiles of psychiatric nurses. Nurs. Res., 1965, 14, 318-321.
6. Costello, C.G. and Anderson, M.E. The vocational and personal preferences of psychiatric and general nurses. Nurs. Res., 1960, 9, 155-156.
7. Edwards, A.L. Manual for the Edwards Personal Preference Schedule. New York: Psychological Corporation, 1959.
8. Johnson, W.L. and Simon, H.M. Some aspects of the interaction of public health nurses and patients in home visits. A progress report. Amer. J. Public Health, 1961, 51, 95-105.
9. Lentz, E.M. and Michaels, R.G. Comparisons between medical and surgical nurses. Nurs. Res., 1959, 8, 192-197.
10. Lentz, E.M. and Michaels, R.G. Comparative ratings of medical and surgical nurses. Nurs. Res., 1960, 9, 198-202.
11. Lentz, E.M. and Michaels, R.G. Personality contrasts among medical and surgical nurses. Nurs. Res., 1965, 14, 43-48.
12. Levitt, E.E., Lubin, B. and Zuckerman, M. The student nurse, the college woman, and the graduate nurse: a comparative study. Nurs. Res., 1962, 11, 80-82.
13. Lukens, L.G. Personality patterns and choice of clinical nursing specialty. Nurs. Res., 1965, 14, 210-222.
14. Matarazzo, J.D., Wiens, A.N., Matarazzo, R.G. and Saslow, G. Speech and silence behavior in clinical psychotherapy and its laboratory correlates. Paper to be read at the Third American Psychological Association Research in Psychotherapy Conference, Chicago, June 1-4, 1966.

15. Matarazzo, J.D., Wiens, A.N. and Saslow, G. Studies in interview speech behavior. In L. Krasner and L.P. Ullmann (Eds.) Research in behavior modification: New developments and implications. New York: Holt, Rinehart and Winston, Inc., 1965, Pp. 179-210.
16. Matarazzo, J.D., Wiens, A.N., Saslow, G., Allen, B.V. and Weitman, M. Interviewer mm-hmm and interviewee speech durations. Psychotherapy: theory, research and practice, 1964, 1, 109-114.
17. Matarazzo, R.G., Matarazzo, J.D., Saslow, G. and Phillips, J.S. Psychological test and organismic correlates of interview interaction patterns. J. Abnorm. Soc. Psychol., 1958, 56, 329-338.
18. Matarazzo, R.G., Wiens, A.N. and Saslow, G. Experimentation in the training and learning of psychotherapy skills. In L.A. Gottschalk and A. Auerbach (Eds.) Methods of research in psychotherapy. New York: Appleton-Century-Crofts, 1965, Pp. 579-635.
19. McNemar, Q. Psychological statistics, 2nd edition. New York: John Wiley and Sons, Inc.
20. Meyer, G.R. The attitude of student nurses toward patient contact and their images of and preference for four nursing specialties. Nurs. Res., 1958, 7, 126-130.
21. Navran, L. and Stauffacher, J.C. The personality structure of psychiatric nurses. Nurs. Res., 1957, 5, 109-114.
22. Navran, L. and Stauffacher, J.C. A comparative analysis of the personality structure of psychiatric and non psychiatric nurses. Nurs. Res., 1958, 7, 64-67.
23. Phillips, J.S., Matarazzo, R.G., Matarazzo, J.D. and Saslow, G. Relationships between descriptive content and interaction behavior in interviews. J. Consult. Psychol., 1961, 25, 260-266.
24. Raskin, A., Baruchow, J. and Golob, R. The concept of task versus person orientation in nursing. J. Appl. Psychol., 1965, 49, 182-187.
25. Roe, A. The psychology of occupations. New York: John Wiley and Sons, Inc., 1956.
26. Saslow, G. and Matarazzo, J.D. A technique for studying changes in interview behavior. In E.A. Rubenstein and M.B. Parloff (Eds.) Research in Psychotherapy. Washington, D.C.: American Psychological Association, 1959, Pp. 125-159.
27. Super, D. The psychology of careers. New York: Harper and Roe, 1957.

28. Wiens, A.N., Matarazzo, J.D., Saslow, G., Thompson, S.M. and Matarazzo, R.G. Interview interaction behavior of supervisors, head nurses, and staff nurses. *Nurs. Res.*, 1965, 14, 322-329.
29. Wiens, A.N., Matarazzo, J.D. and Saslow, G. The Interaction Recorder: an electronic punched paper tape unit for recording speech behavior during interviews. *J. Clin. Psychol.*, 1965, 21, 142-145.
30. Wiens, A.N., Molde, D.A., Holman, D.C. and Matarazzo, J.D. Can interview interaction measures be taken from tape recordings? *J. Psychol.*, 1966, In Press.
31. Wiens, A.N., Saslow, G. and Matarazzo, J.D. Speech interruption behavior during interviews. Submitted for Publication.
32. Weintraub, W. and Aronson, H. The application of verbal behavior analysis to the study of psychological defense mechanisms: Methodology and preliminary report. *J. Nerv. Ment. Dis.*, 1962, 134, 169-181.

Appendix A

Data For Twenty Psychiatric Nurses

Interviewee	Number of Speech Units	Mean Duration of Utterance	Mean Reaction Time Latency	Percentage Interruption Units	Per Cent Relative Talk-time
1.	42	37.9	0.51	16.6	88.9
2.	44	35.1	1.03	34.0	88.4
3.	28	60.5	0.50	42.8	92.3
4.	63	21.3	1.43	6.3	80.0
5.	20	79.1	0.63	15.0	94.6
6.	24	65.4	0.92	20.8	93.5
7.	24	70.9	0.67	25.0	93.8
8.	67	18.7	1.32	16.4	78.1
9.	55	26.7	0.71	25.4	85.6
10.	52	27.0	0.35	26.9	84.7
11.	63	21.0	1.27	17.4	80.1
12.	19	85.7	2.11	15.7	94.5
13.	35	44.7	2.29	8.5	88.7
14.	47	33.1	0.39	29.7	87.8
15.	68	21.9	0.75	29.4	83.6
16.	48	31.9	0.60	45.8	87.4
17.	30	52.6	0.79	20.0	91.2
18.	37	42.2	0.83	13.5	90.3
19.	56	26.0	0.65	32.1	84.5
20.	42	37.2	1.39	7.1	87.9
$\sum X$	864	839	19.1	448	1756
$\sum X^2$	42084	43090	23.7	12352	154617
Mean	43.2	41.9	0.96	22.5	87.8
Sigma	15.8	20.4	0.54	11.0	4.9

Appendix B

Data for Twenty Surgical Nurses

Interviewee	Number of Speech Units	Mean Duration of Utterance	Mean Reaction Time Latency	Percentage Interruption Units	Per Cent Relative Talk-time
1.	30	53.4	0.33	30.0	92.1
2.	78	17.0	0.56	23.0	78.2
3.	47	32.6	0.22	53.1	88.6
4.	45	35.1	0.53	17.7	87.4
5.	29	53.9	0.54	34.4	90.9
6.	48	29.6	0.27	41.6	86.3
7.	63	23.1	0.47	44.4	83.9
8.	54	26.8	0.52	22.2	86.7
9.	60	26.1	0.30	53.3	87.3
10.	60	23.4	0.70	15.0	83.8
11.	31	52.3	0.63	38.7	91.3
12.	96	11.8	0.84	7.2	72.6
13.	66	19.2	0.80	39.3	82.2
14.	68	16.3	0.51	10.3	78.5
15.	65	22.2	0.43	33.8	82.3
16.	45	35.8	0.58	37.8	88.5
17.	24	71.0	0.42	33.3	92.7
18.	34	49.0	1.35	11.8	88.4
19.	69	19.9	0.61	40.6	79.6
20.	59	23.0	0.65	20.3	80.5
$\sum X$	1071	641.5	11.3	607.8	1702
$\sum X^2$	63829	25348	7.51	22086	145352
Mean	53.6	32.1	0.57	30.4	85.1
Sigma	18.5	15.8	0.24	13.8	5.4

Appendix C

Data for Ten Surgery Ward Nurses

Interviewee	Number of Speech Units	Mean Duration of Utterance	Mean Reaction Time Latency	Percentage Interruption Units	Percentage Relative Talk-time
1.	30	53.4	0.33	30.0	92.1
2.	78	17.0	0.56	23.0	78.2
3.	47	32.6	0.22	53.1	88.6
4.	45	35.1	0.53	17.7	87.4
5.	29	53.9	0.54	34.4	90.9
6.	48	29.6	0.27	41.6	86.3
7.	63	23.1	0.47	44.4	83.9
8.	54	26.8	0.52	22.2	86.7
9.	60	26.1	0.30	53.3	87.3
10.	60	23.4	0.70	15.0	83.8
$\sum X$	514	321	4.44	334.7	865.2
$\sum X^2$	28448	11697	2.19	13006	74997
Mean	51.4	32.1	0.44	33.5	86.5
Sigma	15.0	12.4	0.15	14.2	3.9

Appendix D

Data for Ten Operating Room Nurses

Interviewee	Number of Speech Units	Mean Duration of Utterance	Mean Reaction Time Latency	Percentage Interruption Units	Percentage Relative Talk-Time
1.	31	52.3	0.63	38.7	91.3
2.	96	11.8	0.84	7.2	72.6
3.	66	19.2	0.80	39.3	82.2
4.	68	16.3	0.51	10.3	78.5
5.	65	22.2	0.43	33.8	82.3
6.	45	35.8	0.58	37.8	88.5
7.	24	71.0	0.42	33.3	92.7
8.	34	49.0	1.35	11.8	88.4
9.	69	19.9	0.61	40.6	79.6
10.	59	23.0	0.65	20.3	80.5
ΣX	557	320	6.82	273.1	836.6
ΣX^2	35381	13650	5.32	9080	70355
Mean	55.7	32.0	0.68	27.3	83.7
Sigma	22.0	19.3	0.27	13.4	6.4

Appendix E

Data for Interviewer with Twenty Psychiatric Nurses

Interviewee	Interviewer's mean duration of utterance	Interviewer's mean reaction time latency	Interviewer's percentage in- terruption units
1.	4.83	0.33	0
2.	5.15	0.41	0
3.	5.04	0.39	0
4.	5.30	0.52	0
5.	4.74	0.45	0
6.	4.50	0.58	0
7.	4.67	0.38	0
8.	5.37	0.58	0
9.	4.82	0.33	2
10.	4.85	0.54	0
11.	5.47	0.43	0
12.	5.17	0.37	0
13.	5.66	0.40	0
14.	4.67	0.47	0
15.	4.46	0.54	0
16.	4.56	0.52	0
17.	5.39	0.43	0
18.	4.61	0.51	0
19.	5.12	0.41	0
20.	5.24	0.45	0
ΣX	99.6	9.04	2
ΣX^2	499	4.2	4
Mean	4.98	0.45	0.1
S.D.	0.40	0.08	0.6

Appendix F

Data for Interviewer with Twenty Surgical Nurses

Interviewee	Interviewer's mean duration of utterance	Interviewer's mean reaction time latency	Interviewer's percentage in- terruption units
1.	4.57	0.37	0
2.	4.91	0.50	0
3.	4.28	0.43	0
4.	5.02	0.66	0
5.	5.57	0.52	0
6.	4.69	0.46	0
7.	4.65	0.41	0
8.	4.27	0.31	0
9.	4.00	0.30	0
10.	5.09	0.55	2
11.	5.10	0.52	0
12.	4.65	0.51	0
13.	4.53	0.45	0
14.	4.66	0.46	0
15.	5.10	0.58	0
16.	4.86	0.44	0
17.	5.58	0.29	0
18.	6.44	0.38	0
19.	5.94	0.43	0
20.	6.43	0.46	0
ΣX	100.3	9.20	2
ΣX^2	512	4.25	4
Mean	5.02	0.46	0.1
S.D.	0.69	0.09	0.6