

NORTHWESTERN UNIVERSITY

JUDGMENTS OF CONTENT-FREE SPEECH
AS RELATED TO SOME ASPECTS OF PERSONALITY

A DISSERTATION
SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
for the degree
DOCTOR OF PHILOSOPHY

DEPARTMENT OF PSYCHOLOGY

BY
JOHN A. STARKWEATHER
AMSDEN

EVANSTON, ILLINOIS

JUNE 1955

Acknowledgments

The writer is indebted to Dr. Carl P. Duncan for his advice and criticism during the course of this study, and to Dr. Robert E. Harris for his many thoughtful suggestions in the initial stages of the problem.

In addition, thanks are due Dr. Harris and the Institute of Personality Assessment and Research of the University of California for the contribution of speech recordings of selected subjects.

Dr. William F. Soskin generously gave the use of recording equipment and an electronic filter, as well as suggestions regarding the study.

The writer also wishes to express his appreciation to his wife, Jean Starkweather, who typed this manuscript.

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Introduction

A distinction often made with regard to speech behavior is that between the verbal and the vocal aspects of speech. The verbal component is the pattern of sound which results in words, phrases, and other linguistic units making up the content of speech. The vocal components are all the remaining characteristics of sound which may be called tonal variations or voice quality. Soskin (15) has presented these two aspects in communication terms as the simultaneous operation of two communication channels, the verbal channel carrying potential semantic information and the vocal channel carrying potential affective information. He has also spoken of the vocal channel as the carrier upon which the content is superimposed.

When interest is primarily in the personality of the speaker, the vocal component of speech is often considered more important than the verbal component. As an example, Sullivan in discussing psychiatric interviewing has said: "Thus the psychiatric interview is primarily a matter of vocal communication, and it would be a quite serious error to presume that the communication is primarily verbal. The sound-accompaniments suggest what is to be made of the verbal propositions stated (17, p. 7)." Further, "It is by alertness to the importance of these things as signs or indicators of meaning, rather than by preoccupation only with the words spoken, that the psychiatric interview becomes practical in a reasonable section of

one's lifetime (17, p. 5)."

Interest in dealing separately with vocal components of speech has been shown by the use of imaginative methods such as an interview in which subjects "talk" using only the alphabet or numbers (18). Recently a method has evolved which removes artificiality of this sort from the original speaking situation.

French and Steinberg (6), and later Licklider and Miller (11), demonstrated that the vocal and verbal aspects of speech depend upon essentially separate frequency bands of sound. On the basis of these studies Soskin (15) arranged to separate physically the two aspects of speech: the verbal channel carrying predominantly semantic information and the vocal channel carrying predominantly information regarding the speaker and his affective state. In unpublished studies by Soskin and Kauffman (briefly referred to in 10), an electronic filter was tested for capacity to remove the verbal content. A filter passing frequencies between approximately 100 and 650 cycles per second left residual sound in which content was unintelligible, although judges listening to it were able to agree significantly in classifying the affective state of the speaker.

There is thus available a method for separating the vocal and verbal aspects of speech. It should be possible with this technique to compare the usefulness of vocal and verbal aspects of speech as well as normal speech as measures of the personality of the speaker.

There are a series of studies, beginning with that of Pear in 1931 (12), which have dealt with the reliability of judgments of personality from undifferentiated speech as normally heard. These studies are not directly pertinent to our present interest in isolated verbal and vocal aspects of speech, but it has been pointed out (11) that a number of them found the same difficulty in this type of judgment. The agreement among judges is often greater than the accuracy, indicating the presence of judging stereotypes.

It is possible that the inaccuracy of judging in these studies may be due in part to confusion arising between verbal and vocal aspects of speech. If we are primarily interested in the personality of the speaker, perhaps the isolated vocal aspect would be a better basis for judgment than normal speech which includes both verbal and vocal aspects. There are apparently only two studies which bear on this point; these will now be described.

In one of these reports the author (16) examined the possibilities of filtering to render pre-recorded speech free of content, using a simplified low-pass filter which attenuated frequencies above about 300 cycles per second. Speech content was lost through this filtering and probably a good deal more was lost also, though some indication of pitch, rate, loudness, and the variability of these dimensions, remained. Three samples, 30 seconds each, of the speech of McCarthy and Welch were selected from recordings made during the 1954 Army-McCarthy hearings. They were chosen from partial recordings

of three days of the hearings to fit as closely as possible three rough categories of context, named "matter-of-fact," "challenging," and "indignant."

The six samples were presented twice in a counterbalanced order as though they were 12 different voices. During ten-second silences between them, 12 clinical psychologists were asked to judge the filtered samples on five-point scales for "amount of emotion expressed," and "pleasantness." During a third presentation the judges were given the names used by the experimenter to describe the three context categories and asked to choose the most appropriate for each sample. This last step was then repeated with a normal unfiltered recording of the voices. Until this point judges were unable to identify the voices or relate them to the congressional hearings.

On judgments of "amount of emotion," a significant difference was found between context categories of the selections. There was also a significant interaction between voices and context categories. On judgments of "pleasantness," significant differences were found between voices and between context categories. These differences, as well as a significant agreement between the judges' and experimenter's choice of context, were interpreted as evidence for the presence of affective information in content-free speech.

In the other study, Kauffman (10) compared judgments of speech recordings which had been filtered free of content to judgments of normal recordings and to those of speech content as judged from a

typescript. He was interested in the relationship of verbal and vocal aspects of speech to the ambiguity of communication, defined as follows: "The term ambiguity as used in this study refers to a lack of specificity of meaning of the total sample of speech which permits listeners to make various interpretations. Quantitatively, this characteristic of speech can be represented by the extent of agreement among listeners as to the meanings conveyed (10, p. 11)."

Another variable in the study was a classification of meanings according to the manipulation of environment or the expression of affect. Ten scripts were prepared to be used as speech samples which were designed to cover four manipulative meanings: enhancing either the self or another person, or derogating the self or another person. A professional actor recorded these scripts in two ways. In one recording he used an expressive manner which was intended as appropriate for the manipulative meaning (congruent). In the other recording he used an expressive manner intended as inappropriate for the manipulative meaning (incongruent). Later, Kauffman obtained judgments of congruence by having judges compare isolated verbal content (typescript) and isolated vocal speech patterns (filtered content-free). In this comparison, judges first read the typescript of a given verbal content, then heard the two recordings of it.

Judges were provided with forms which structured the two classes of meaning into 12 categories for the manipulative meanings,

and 17 categories for the expressive meanings. These amounted to an organized check list of descriptive terms.

From the filtered, content-free speech judgments, the judges' agreement on the check list differed from a chance level for all but one of the 20 samples on expressive meanings and for all but five on manipulative meanings. On both the judgments of content-only from the typescript and judgments from normal full frequency recordings, all distributions of expressive and manipulative judgments were significant. The comparison judgments used to measure congruence significantly differentiated the prepared congruent from the prepared incongruent samples. A product-moment correlation between ambiguity as measured by disagreement among the judges in their judgments of the total normal message and the measure of congruence was .61. There was also some difference in the magnitude of inter-judge agreement for the two classes of meaning, with less agreement on manipulative meanings from filtered speech and less agreement on expressive meanings judged from the typescript.

In Kauffman's terms, we are interested in the present study primarily in expressive functions of speech behavior for personality description, which Kauffman found to be related more to the vocal than the verbal channel. That the manipulative function tends to be dominant in judgments of the full voice lends weight to the possibility that it may be a distracting element when judges are asked to describe the speaker, especially if the verbal aspect is

at odds with the vocal. Soskin (15) has presented the argument that difference in meaning carried by the verbal and vocal components (incongruence) is produced when the speaker is in conflict, because the vocal channel is under less conscious control than the verbal channel. Subjects who might show verbal-vocal incongruence would then be those presumed to be in conflict and to have difficulty in control of their emotions. Following this suggestion, we may state that our general purpose in the present study is to compare judgments of the verbal and vocal aspects of speech with special reference to subjects who may have some difficulty in controlling their emotions and whose speech may therefore show verbal-vocal incongruence.

One group of subjects who fit the description of some inability to control emotion is the group diagnosed as having essential hypertension. It has not been unusual for clinicians to propose that personality factors are associated with essential hypertension (1, 3, 13, 14). In particular these writers have stressed a constant struggle for control of hostile impulses in patients with high blood pressure. Most of these writings have been qualitative descriptions based on observations of patients during treatment. However, somewhat better evidence of a relation between blood pressure and emotional control is offered in a study by Harris, et al. (9). By making use of the fact that people who show transient high blood pressure early in life have a high probability of becoming

hypertensive in later life, these investigators chose undergraduate college women who showed high blood pressures on their physical examinations when entering college. They called this group prehypertensive, and compared them with another group who showed low blood pressure in their physical examinations.

In a psychiatric interview, this prehypertensive group was described similiarly to patients with clinically diagnosed hypertension, and the psychiatrist was able to separate the two groups at a significant level. In role-playing situations designed to be stress producing, they were described by observers using adjective-check-lists as behaving less effectively, being less controlled, less poised, and creating a less favorable social impression.

In addition, Harris (7) has derived a personality description of a group of male prehypertensive subjects based on the sorting of descriptive items by six observers of role-playing situations. Since the voice recordings used in the present study were taken from this group of male prehypertensives and from the same role-playing situations, the derivation of this description is given in some detail in the procedure section. Harris interpreted the items descriptive of the prehypertensive group as falling into two major factors, (a) Dominance, assertiveness, and initiative, and (b) Lack of awareness or concern about other people.

It can be seen that the Harris data agree with psychiatric observations that control of assertiveness or aggressiveness is an

important variable in hypertension. In addition, his results point to a lack of social acceptability of hypertensive people, i.e., others may see them as less pleasant. This may be merely a resultant of aggressiveness, and not additional information. However, judges in the present study will be asked to rate aggressiveness and pleasantness separately for each voice sample, and it will be possible to see if these two sets of judgments are in fact independent in order to use them as separate measures.

To summarize briefly, a distinction has been made between verbal and vocal aspects of speech and a method described which allows their separation and separate study. There is some evidence that the vocal aspect is more important to judgments regarding the personality of the speaker, and the possibility arises that difficulty in judgments of personality from normal voice may be due to confusion between verbal and vocal aspects. The possibility of this confusion was demonstrated in Kauffman's study (10) by less agreement among judges (ambiguity) listening to the normal voice when the verbal and vocal aspects had been arranged to be at odds with each other (incongruent). Therefore, the purpose of the present study may be divided into two parts. The first is a comparison of judgments of isolated verbal and vocal aspects of speech to judgments of the same speech in its normal form where both aspects are present. The second is to compare the relative usefulness of

the judgments for personality descriptions of subjects who are likely to show verbal-vocal incongruence.

Procedure

Two areas of interest have been discussed separately thus far. One might be called a further investigation of the characteristics of content-free speech; the other an application of this technique to a psychosomatic problem. Although the results from each will be analyzed and discussed separately, the data were in fact gathered simultaneously in the manner to be described here.

Subjects

Description of the sample. The subjects were selected from 100 U. S. Air Force captains studied at the University of California Institute of Personality Assessment and Research. This group has been described by Barron as follows (2, p. 35): "As a group they were above average in intelligence, in education, in physical health, and in personal stability. The age range was from 27 to 50, with a mean age of 33. All of the subjects were men. All but three were married, and most of them had at least two children. In pre-army socioeconomic background they tended to be lower middle class. The majority of these officers were combat veterans, and many of them had been decorated for valor in World War II. In most ability measures they scored well above average, and were less variable than men-in-general."

Subject selection. From the total 100 officers, three groups of ten were selected on the basis of their scores both on blood pressure recordings and on a personality score related to high blood pressure to be described below. The measure of blood pressure was an average of systolic readings under three conditions: resting, after mild exercise, and after recovery from exercise. For subjects chosen for high blood pressure this measure exceeds 150, and for subjects chosen for low blood pressure, less than 120.

The personality score was obtained by having six observers rate the officers on their behavior in two role-playing situations which will be described later. The rating was done by means of a set of 50 statements written to describe behavior in these situations. Each observer sorted the 50 statements into nine piles from a scale value of one, those items most descriptive, to a scale value of nine, those items least descriptive. The only restriction on the observers' sortings was that the frequencies of items to be sorted into each scale value were fixed to approximate frequencies corresponding to the normal curve, a procedure usually termed a Q-sort. The frequencies used in the present procedure were as follows:

Scale value	1	2	3	4	5	6	7	8	9
Number of items	2	3	6	9	10	9	6	3	2
	Most descriptive					Least descriptive			

The mean scale value was found for each item for the six observers,

and the items were redistributed in accordance with the frequencies above, that is: the two items with the lowest mean scale values were placed in position one, the next three in position two, etc., to arrive at a mean Q-sort for each subject.

Twenty subjects were selected from the total 100 who had the highest measures of average systolic blood pressure. The Q-sort descriptions of these subjects were combined to form a quantitative scale of observers' descriptions associated with high blood pressure. Because of this association with high blood pressure the scale has been called the hypertensive personality syndrome (HPS). This is the group mentioned earlier, for which Harris (7) interpreted the descriptive items as falling into two major factors, (a) Dominance, assertiveness, and initiative, and (b) Lack of awareness or concern about other people.

For the present study three groups of ten subjects each were chosen as follows: (I) a group with high blood pressure and high HPS, (II) a group with low blood pressure and equally high HPS (matched pairs on HPS), and (III) a group with low blood pressure and low HPS (matched pairs with group II on blood pressure). Subjects' scores on the average systolic blood pressure measure and on the HPS scale are given in Table 1.

The HPS scores are the basis of difference between two groups (II and III) with equally low blood pressure. The blood pressure

Table 1

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Hypertensive Personality Syndrome Scores and Average
Systolic Blood Pressure of Experimental Groups

I:Hi HPS, Hi BP			II:Hi HPS, Lo BP			III:Lo HPS, Lo BP		
Subject	HPS	BP	Subject	HPS	BP	Subject	HPS	BP
Can	44	153	Buc	44	84	Dod	07	85
Cre	52	152	Gar	52	104	Pri	16	101
Dav	56	234	Pat	55	80	For	10	84
Dic	40	182	Pin	40	98	Bur	05	94
Mit	42	229	Wor	44	100	Mel	20	100
Our	36	220	Sta	37	86	Hus	13	89
Pay	46	163	Hub	46	105	Mur	08	110
Pet	50	196	Wil	50	44	Smo	26	45
Smi	50	305	Bre	50	96	Wen	22	94
Whi	<u>48</u>	<u>244</u>	Lea	<u>48</u>	<u>116</u>	Mac	<u>21</u>	<u>115</u>
\bar{X}	46.4	207.8		46.6	91.3		14.8	91.7

scores are the basis of difference between two groups (I and II) with equally high HPS scores.

Materials

Original recordings of role-playing sessions. The subjects were seen in groups of ten for three days of living-in-assessment. As one assessment procedure, the officers were studied one at a time in two interpersonal role-playing situations. The situation, his plot-outline, and his role, were described to each subject, as well as the role of the person playing opposite him. The other person was a staff member whom we shall call the standard role player, and who guided the interaction in accordance with a pre-arranged outline and forced the initiative onto the subject at pre-arranged choice points. The description follows that of Harris (8).

As the subject entered the experimental room he found a small table on one side of the room upon which was a microphone leading to a nearby recording apparatus. On the other side was a longer table where six observers were seated. One of the observers, who acted as a kind of stage director, introduced the standard role player and the other observers to the subject. He asked the subject to seat himself at the smaller table and described the procedure as follows: "We are asking you to participate in two situations of the kind which we think you may have, or will sometime experience

in real life. These situations are described in the instructions which I am going to give to you. We are not interested in your acting ability, but we would like to see how you would handle the situation if it came up in real life. You will be playing this scene with Dr. _____. Here are the instructions for the first scene."

After the subject had read instructions describing the scene, his role, etc., he was asked if he had any questions. These were answered noncommittally such as "It's up to you," or "However you want to do it." He was asked to step back by the door, knock, and begin the situation. The recording machine was turned on within his view.

The first scene lasted 10 to 15 minutes. In this situation the subject was asked to play the role of a spokesman for his fellow salesmen to protest the firing of a salesmanager whom they all respect. The instructions given the subjects before this scene are given in Appendix A.

In this situation the standard role-player acted the part of the vice-president. He evaded any explanations of the firing of the salesmanager, but offered the same position to the subject, making it as attractive as possible.

In the second situation, each subject was assigned the role of a young man who has recently inherited his father's business. He was told that he has adequate training and experience for the

position, but that he has been away in the service, that he now finds many practices of the company to be out of date, but that his plans are blocked by the general manager. He has been debating whether or not to fire the general manager and has called him in to see him. The instructions given the subjects are given in Appendix B.

In this situation the standard role-player played the general manager.

Selection of voice samples. For each of the subjects whose voices were to be used, three 20-second voice samples were chosen from the recordings of these two situations. In the first situation, the vice-president began by saying "I understand you wanted to see me." The subject was then expected to explain his role as a spokesman for the other salesmen. One 20-second sample (context A) was taken from this point. A second 20-second sample (context B) was taken immediately after the vice-president has offered the salesmanager's position. This is, then, the subject's reaction to the job offer by the vice president. In the second situation the general manager who has been called in, said "I understand you wish to see me" and a 20-second sample (context C) was taken from the initial remarks of the subject.

Derived recordings. The selected voice samples (a total of 90) were copied on recording tape in a random order with a ten-second silence between them. The order is given in Appendix C. Four similar voice samples from other subjects not in the experimental groups were placed at the beginning of this recording to be

used as introductory samples in judging. When numbers were later inserted between voice samples, this tape became the normal material to be played back for judging. Another copy was made through an electronic filter in order to produce content-free material. There was also a content-only (typescript) form of the voices. Thus, the stimulus materials were in three forms, each consisting of four introductory 20-second voice samples and 90 20-second experimental voice samples. The three forms of material differed in the information available to the judges: a filtered content-free recording, presented aurally with a ten-second space between voice samples; a normal recording, presented as above; and content-only, presented in typewritten form. The typescript is reproduced in Appendix D.

Judging

The judges were 75 students from an elementary psychology course at Northwestern University. They were divided into three groups of 25, each of which judged different materials. One group judged the filtered, content-free speech samples; a second group judged the normal voice samples; and the third group judged the content-only samples from a typescript.

Immediately following presentation of each voice sample, the judges wrote a scale value from one to six to indicate their judgment on each of two scales. Large (8 x 16 in.) easily read scales were provided within view of the judges, numbered from one to six.

One scale was labeled "submissive" at position one and "aggressive" at position six. The other was labeled "unpleasant" at position one and "pleasant" at position six. Judges wrote their responses, two for each voice sample, on appropriately marked 4 x 6 in. cards. The judging forms are reproduced in Appendix E.

Judges served on three successive days, judging 30 voice samples on the two scales during each session. They judged the four practice voice samples at the beginning of the first day and these were checked for an understanding of the instructions before proceeding to experimental voice samples. Presentation order was varied by groups of 30 voice samples. Samples 1-30 were judged first by some judges, samples 31-60 were judged first by others, etc.

The judges usually worked in small groups of eight or less, with seating spaced to maintain independent judgments, but occasionally a judge would work alone. Instructions for the three types of material are given in Appendix F. Instructions for judgments of content-free and normal information were presented by tape recordings prior to the recorded practice voice samples. Instructions for judgments of content-only information were presented in written form.

Apparatus

The original recordings were discs made on Gray Audiograph equipment. They were copied with a Magnacordette PT6A tape recorder at 3-3/4 inches per second. The filtered version was copied with

two Magnacordette PT6A recorders at 3-3/4 inches per second. Tapes were played back for judging using a TDC Stereotone model 130 tape recorder, an eight inch Jensen speaker placed at a distance from the recorder and facing the judges, and a tape speed of 3-3/4 inches per second.

Electronic filter. The isolation of vocal speech components for the presentation of content-free speech samples was accomplished by an electronic filter passing the frequencies from 100 to 450 cycles per second with a 60 decibel per octave attenuation at the upper limit. This filter is described in detail by Kauffman (10). The circuit diagram, as the filter was used in this study, is presented in Appendix G.

Kauffman (10) reports unpublished studies by Soskin and Kauffman indicating one to three percent of speech content correctly perceived with a similar filter, with an upper limit of 650 cycles per second, most of the correctly perceived words being articles and connective words which did not contribute measurably to the semantic meaning of the speech samples. A slightly lower cutoff frequency was used in the present study because of the low voices of some of the subjects.

Results

For convenience in presentation, the data will be organized in two parts corresponding to the two aspects of the study. First, a comparison will be made among judgments of the three kinds of information available: content-free speech, normal recordings, and content-only. Second, the data will be analyzed with regard to variables incorporated in the voice samples, i.e., a comparison will be made of the judgments of voices of groups of subjects who differ on blood pressure measures and HPS scores.

Analysis with regard to information available for judging

It will be recalled that data were gathered simultaneously on both "aggressive" and "pleasant" scales (the judges marked both scales in the intervals between voice samples), and we shall analyze the results from each of these scales in turn.

"Aggressive" judgments. Reliability estimates of judgments on the six-point scale labeled submissive versus aggressive are presented in Table 2. These estimates are based on the total 90 experimental voice samples, with independent groups of 25 judges for each type of information. Although all of these correlations are significant, it is obvious that the coefficients for interjudge reliability (r_i and r_i') are not particularly high. However, the

Table 2

Reliability Estimates of "Aggressive" Judgments

Information	\underline{r}_i	\underline{r}_i'	\underline{r}_n
Content-free	.42	.44	.95
Content-only	.21	.23	.87
Normal	.42	.45	.95

All the above correlations are significant beyond the .01 level.

\underline{r}_i is the intraclass correlation estimate of interjudge reliability
(a lower bound estimate).

\underline{r}_i' is the intraclass correlation adjusted for differences in
judges' means. (\underline{r}_i defines reliability in terms of identity
of scores, whereas \underline{r}_i' defines reliability in terms of rela-
tive position of scores, and is analogous to the Pearson \underline{r}).

\underline{r}_n is an estimate of the reliability of the pooled measure obtained
from 25 judges (based on \underline{r}_i).

pooled reliability for a group of judges (r_n) is quite satisfactory. Reliability of content-only judgments is somewhat less than either content-free or normal judgments.

Since each judge rated all 90 voice samples, the 90 scores from one judge are not independent. Because of this, the data were analyzed by an elaboration of the method of analysis of variance of repeated measures described by Edwards (4). Thus, we have three types of information ("groups") each judged by separate groups of judges ("subjects") each of whom yielded 90 scores ("trials"). However, the 90 voice samples represent only 30 different voices each appearing in three different contexts. Therefore, the analysis also included a breakdown for the voice variable and its interactions.

The analysis is summarized in Table 3. There is a significant difference between the three kinds of information. The test of significance for this term is based upon independent, randomly assigned judges, and the error term is the variation between judges who used the same kind of information. The tests of significance for all other terms include a possible correlation due to repeated judgments by the same judges, and the error term is the interaction of judges and voice samples pooled for the three groups of judges.

The pooling of the three interactions of judges times voice samples is based on the assumption that the mean squares associated with the three interactions are homogeneous. A chi-square test of

Table 3

Analysis of Variance of "Aggressive" Judgments

Source	<u>df</u>	Mean Square	<u>F</u>	
Information: CF, CO, N	2	155.320	11.16	**
Between judges using same information	72	13.917		
Between voices	29	68.246	60.07	**
Between voice samples of the same voice				
(pooled context variation)	60	16.678	14.68	**
Information x voices	58	15.510	13.65	**
Information x voice samples of the				
same voice	120	8.074	7.10	**
Pooled judges x voice samples	6408	1.136		✱

** Significant beyond the .01 level of confidence.

✱ See text for correction of this term for heterogeneity of variance.

homogeneity gave a value of 87.06. Since this value is significant beyond the .01 level with two df, the assumption is not tenable.

The three variance estimates (mean squares) were 1.021 for content-filtered information, 1.399 for content-only information, and 0.968 for normal information. It is clear that the interaction of judges and voice samples shows greater variability for judgments of content-only information.

We can circumvent the difficulty that the interactions should not be pooled to yield the error term shown in Table 3 by using, as the most conservative estimate of the magnitude of the error term, the value of the largest mean square. Upon using it as error, it turns out that all terms tested against it are still significant at well beyond the .01 level.

There is thus a significant difference between the voices of the 30 subjects, as well as between the three voice samples of each subject. This latter difference can be interpreted as the variation among the three contexts, pooled for the 30 subjects. There are significant interactions both between information and voices, and between information and the pooled context variation.

Product moment correlations were computed between the judgments of the three groups of judges, to determine the relationship between the three types of information available to them. The correlation between the normal and content-free judgments was .79, between the normal and content-only judgments it was .22, and

between the content-only and the content-free judgments it was .17. An r of .205 is required ($df = 89$) at the .05 level for a significant difference from zero. Thus, the correlation between judgments of normal information and judgments of either isolated aspect of speech was significant, with a higher correlation appearing between judgments of the two kinds of information presented audibly. The correlation between the two isolated aspects of speech was not significant. The correlation plots were inspected and appeared to be normal and linear.

"Pleasant" judgments. Reliability estimates of judgments of the six-point scale labeled unpleasant versus pleasant are presented in Table 4. Again the estimates are based on the total 90 experimental voice samples and 25 independent judges for each type of information. As was true for the "aggressive" judgments, all correlations are significant, although the interjudge reliability is not high. The pooled reliability for groups of judges is reasonably high, but lower than the corresponding estimates for the "aggressive" judgments. Normal judgments are more reliable than content-free or content-only judgments.

The judgments were analyzed by the same type of analysis of variance as was used for the "aggressive" judgments. The results of the analysis are presented in Table 5. It may be seen that there is a significant difference between the three kinds of information. There are significant differences both between the voices of the

Table 4
Reliability Estimates of "Pleasant" Judgments

Information	\underline{r}_i	\underline{r}_i'	\underline{r}_n
Content-free	.12	.13	.77
Content-only	.14	.17	.80
Normal	.26	.29	.90

All the above correlations are significant beyond the .01 level.

\underline{r}_i is the intraclass correlation estimate of interjudge reliability
(a lower bound estimate).

\underline{r}_i' is the intraclass correlation adjusted for differences in
judges' means. (\underline{r}_i defines reliability in terms of identity
of scores, whereas \underline{r}_i' defines reliability in terms of rela-
tive position of scores, and is analogous to the Pearson r).

\underline{r}_n is an estimate of the reliability of the pooled measure obtained
from 25 judges (based on \underline{r}_i).

Table 5
Analysis of Variance of "Pleasant" Judgments

Source	<u>df</u>	Mean Square	<u>F</u>
Information: CF, CO, N	2	74.985	11.16 *
Between judges using same information	72	19.162	
Between voices	29	26.367	20.00 **
Between voice samples of the same voice (pooled context variation)	60	7.990	6.06 **
Information x voices	58	10.265	7.78 **
Information x voice samples of the same voice	120	5.432	4.12 **
Pooled judges x voice samples	6408	1.318 /	

* Significant beyond the .05 level of confidence.

** Significant beyond the .01 level of confidence.

/ See text for correction of this term for heterogeneity of variance.

30 subjects, and between the three voice samples of each subject (the pooled variation among contexts). Both the interaction between information and voices, and that between information and the pooled context variation, are significant.

Again, the three interactions of judges times voice samples, which were pooled to yield the error term shown in Table 5, were not homogeneous. The three values were 1.394 for content-filtered information, 1.413 for content-only information, and 1.147 for normal information. These differ beyond the .01 level (chi-square was 28.53). Again, however, use of the most conservative estimate of the error term (the largest mean square) does not change the levels of significance shown in Table 5; all terms are still significant beyond the .01 level.

The correlation between the normal and content-free "pleasant" judgments was .51, between the normal and content-only judgments it was .20, and between the content-only and content-free judgments it was .02. Again an r of .205 is required at the .05 level for a significant difference from zero. Thus the pattern of correlations is much the same as for the "aggressive" judgments. The correlation between judgments of normal information and judgments of content-free information was significant, and between normal and content-only information it was a borderline value. The correlation between the two isolated aspects of speech was not significant.

Relation between "aggressive" and "pleasant" judgments.

Product moment correlations were computed between judgments on the "aggressive" scale and on the "pleasant" scale. The correlation for content-free judgments was .62, for content-only judgments it was -.04, and for normal judgments it was .82. It is clear that "aggressive" and "pleasant" judgments are related in the audible material, but that this is not true for judgments of the typescript.

Analysis with regard to voice sample variables

"Aggressive" judgments. Table 6 presents means of "aggressive" judgments for the three groups chosen on blood pressure (BP) and the hypertensive personality syndrome (HPS). The means are presented separately for the three types of information and for the three contexts. The same results are presented graphically in Figures 1, 2, and 3.

Since each subject spoke in three contexts, the three mean judgments for each subject are not independent. We have therefore again made use of the method of analysis of variance of repeated measures described by Edwards (4) for each type of information separately. Thus, in the analysis for each type of information we have three independent groups of subjects who differ on HPS and BP scores, and each subject yielded three mean judgment scores ("trials"). The results of the analysis for content-free information are given in Table 7, for content-only information in Table 8,

Table 6

Means of "Aggressive" Judgments by Groups and Contexts

Groups	Contexts		
	A	B	C
	Content-free		
I	3.28	3.54	3.57
II	4.01	3.84	3.94
III	2.78	3.02	3.22
	Content-only		
I	3.95	4.26	4.08
II	3.96	4.23	3.78
III	4.03	3.61	3.94
	Normal		
I	3.68	3.75	3.64
II	4.16	3.88	3.96
III	2.93	3.42	3.34

Group I has high HPS and high BP.

Group II has high HPS and low BP.

Group III has low HPS and low BP.

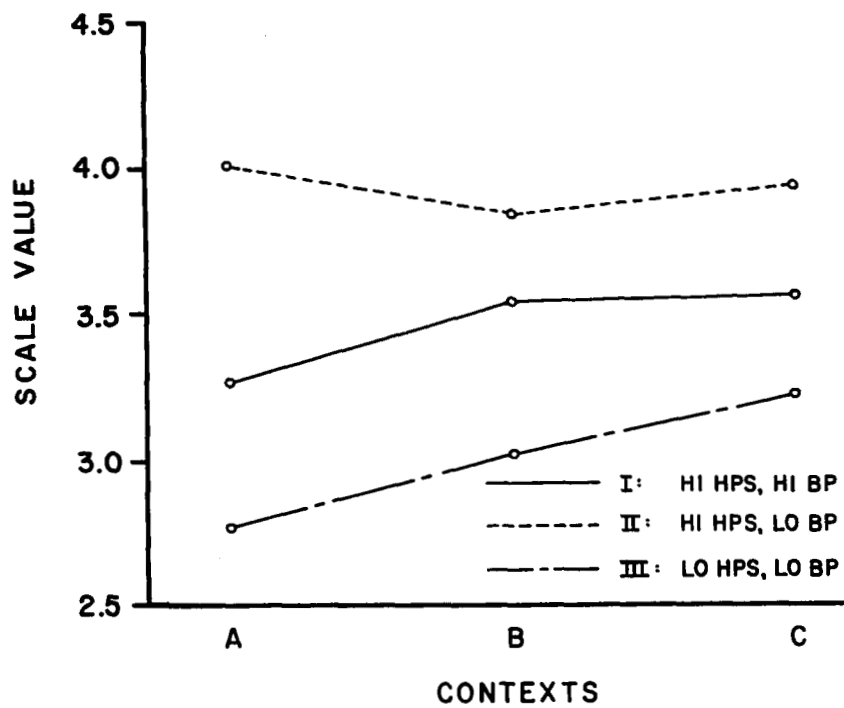


Fig. 1. Means of "aggressive" judgments by groups and contexts of content-free information.

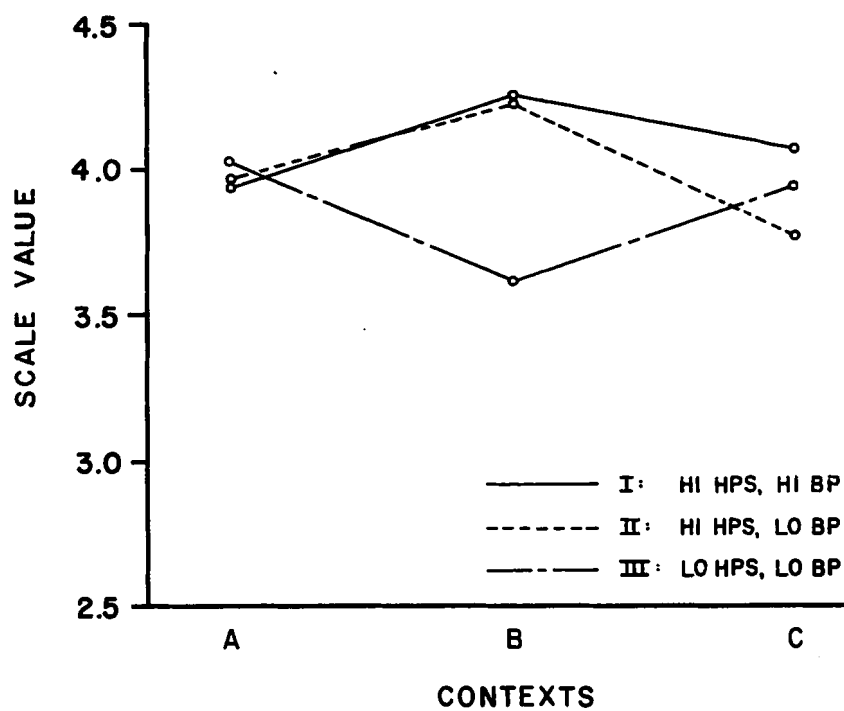


Fig. 2. Means of "aggressive" judgments by groups and contexts of content-only information.

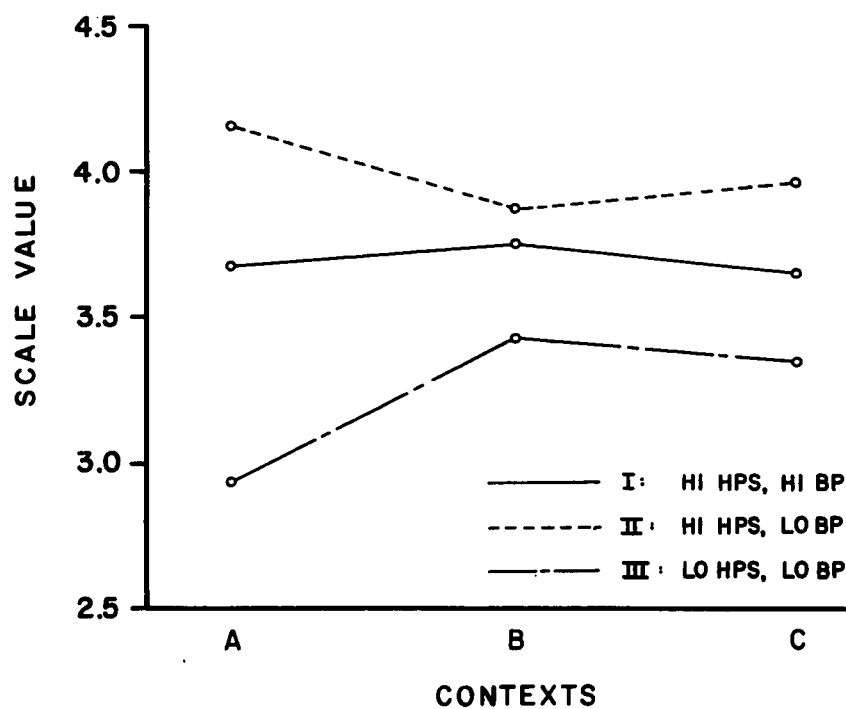


Fig. 3. Means of "aggressive" judgments by groups and contexts of normal information.

Table 7
 Analysis of Variance of Mean "Aggressive"
 Judgments of Content-free Information

Source	<u>df</u>	Mean Square	<u>F</u>
Between groups: I, II, III	2	4036.845	4.849 *
Between subjects in the same group	27	832.454	
Between contexts	2	232.410	---
Contexts x groups	4	138.078	---
Pooled subjects x contexts	54	288.621	

* Significant beyond the .01 level of confidence.

Table 8
 Analysis of Variance of Mean "Aggressive"
 Judgments of Content-only Information

Source	<u>df</u>	Mean Square	<u>F</u>
Between groups: I, II, III	2	264.310	1.050
Between subjects in the same group	27	251.763	
Between contexts	2	48.310	---
Contexts x groups	4	368.495	1.075
Pooled subjects x contexts	54	342.804	

and for normal information in Table 9. Among these three tables there is only one significant difference: the three groups differ on "aggressive" judgments of content-free information.

The groups may also be compared in another way, appropriate because they differ on two variables, BP and HPS scores. Two groups, I and II, differ in BP and pairs of subjects in these groups are matched on HPS scores. Groups II and III differ on HPS scores and pairs of subjects in these groups are matched on BP scores. The third possible comparison, between groups I and III, is not meaningful since these groups differ on both variables.

Comparisons were carried out in this way for the three types of information and for each context separately, resulting in 18 comparisons of "aggressive" judgments of the type shown in Table 10. The results may be summarized as follows, without presenting detailed tables of the other comparisons. There were no significant differences between groups in the B or C contexts (the second and third role-playing situations: the reply to a job offer, and initial remarks to a subordinate). Judgments of content-free information differentiate both variables of blood pressure and HPS (both Groups I and II, and II and III, are significantly different). Judgments of normal information differentiate the HPS variable but not blood pressure (Groups II and III are significantly different, but I and II are not).

Table 9
 Analysis of Variance of Mean "Aggressive"
 Judgments of Normal Information

Source	<u>df</u>	Mean Square	<u>F</u>
Between groups: I, II, III	2	2835.735	3.141
Between subjects in the same group	27	902.736	
Between contexts	2	42.635	---
Contexts x groups	4	269.465	---
Pooled subjects x contexts	54	293.917	

Table 10

Analysis of Variance Between High and Low Blood Pressure Groups for
 "Aggressive" Judgments of Content-free Information in Context A
 (Groups Matched by Pairs on HPS Scores)

Source	<u>df</u>	Mean Square	<u>F</u>
Between groups: high blood pressure			
versus low blood pressure	1	1656.200	11.751 **
Pairs matched on HPS scores	9	609.089	4.293
Groups x pairs	9	141.089	

** Significant beyond the .01 level of confidence.

It will be recalled that we are interested in the possibility that prehypertensive subjects will show verbal-vocal incongruence. Kauffman (10) obtained congruence ratings by having judges make direct comparisons between the same verbal content read with appropriate and inappropriate affect. In the present study, however, only one type of information was available to each judge, so our measure of congruence is necessarily the correlation between judgments of content-free and content-only information, the isolated vocal and verbal aspects of the speech samples. The product moment correlation computed between the content-free and the content-only "aggressive" judgments was $-.08$ for group I (high HPS, high BP), $.44$ for group II (high HPS, low BP), and $.01$ for group III (low HPS, low BP). An r of $.355$ is required ($df=29$) at the $.05$ level for a significant difference from zero. Significant congruence, by the above definition, is found only in the voices of group II (high HPS, low BP). No group shows significant incongruence, though there is a negative correlation for the high BP group.

The prediction follows from the findings of Kauffman (10), that a lack of agreement (ambiguity) among judges listening to the normal voice should be related to verbal-vocal incongruence. Though there is no group with significant incongruence, group II shows significant congruence, and judgments of the normal voice should be more reliable for this group. Reliability estimates (r_i , intra-class) of judgments of normal information are as follows: $.40$ for

group I, .37 for group II, and .41 for group III. These are all significant beyond the .01 level, but since there is little difference among groups, there is no evidence for less ambiguity for group II.

"Pleasant" judgments. Table 11 presents means of "pleasant" judgments for the three BP and HPS groups, again for three types of information and three contexts. The same results are presented graphically in Figures 4, 5, and 6.

The mean judgments of 25 judges were analyzed in a manner similar to the "aggressive" judgments. The results of the analysis of variance for content-free information are given in Table 12, for content-only information in Table 13, and for normal information in Table 14. No differences were significant in these analyses.

In the same way as the treatment of the "aggressive" judgments, comparisons were made between groups I and II (which differ in blood pressure) and between groups II and III (which differ in HPS scores). A total of 18 comparisons were carried out for the three types of information and each context separately, as in Table 10. No differences were found to be significant.

The correlations measuring congruence between "pleasant" judgments of content-free and content-only information were found to be as follows: $-.18$ for group I, $.21$ for group II, and $.07$ for group III. These correlations are in the same relative order as those based on the "aggressive" judgments, but none here are significant, since again an r of $.355$ is required ($df=29$) at the $.05$

Table 11
Means of "Pleasant" Judgments by Groups and Contexts

Groups	Contexts		
	A	B	C
Content-free			
I	3.43	3.44	3.23
II	3.40	3.43	3.29
III	3.08	3.08	3.43
Content-only			
I	3.69	3.59	3.61
II	3.64	3.69	3.53
III	3.68	3.74	3.78
Normal			
I	3.47	3.42	3.56
II	3.68	3.30	3.46
III	3.08	3.25	3.27

Group I has high HPS and high BP.

Group II has high HPS and low BP.

Group III has low HPS and low BP.

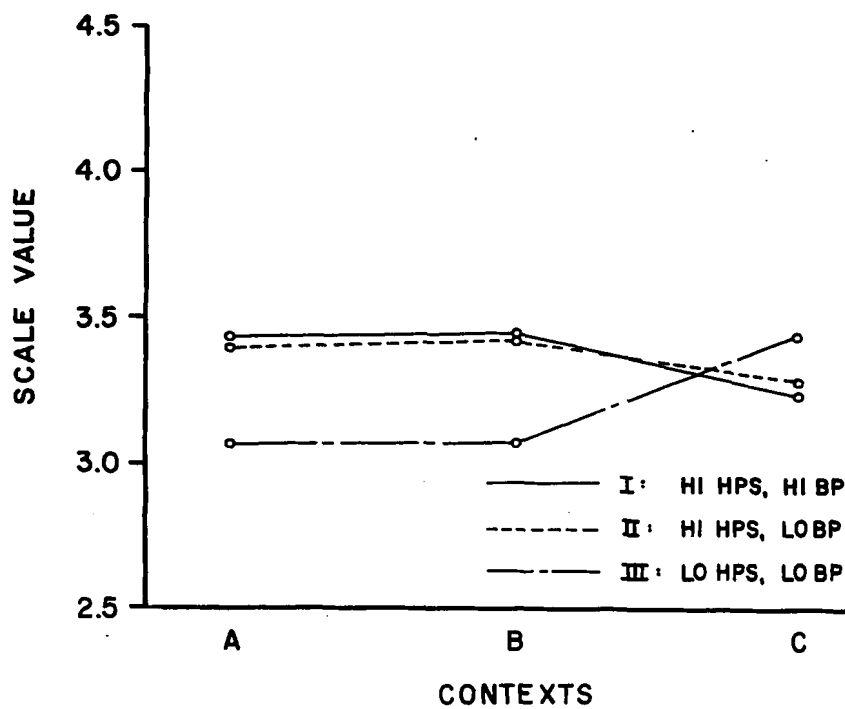


Fig. 4. Means of "pleasant" judgments by groups and contexts of content-free information.

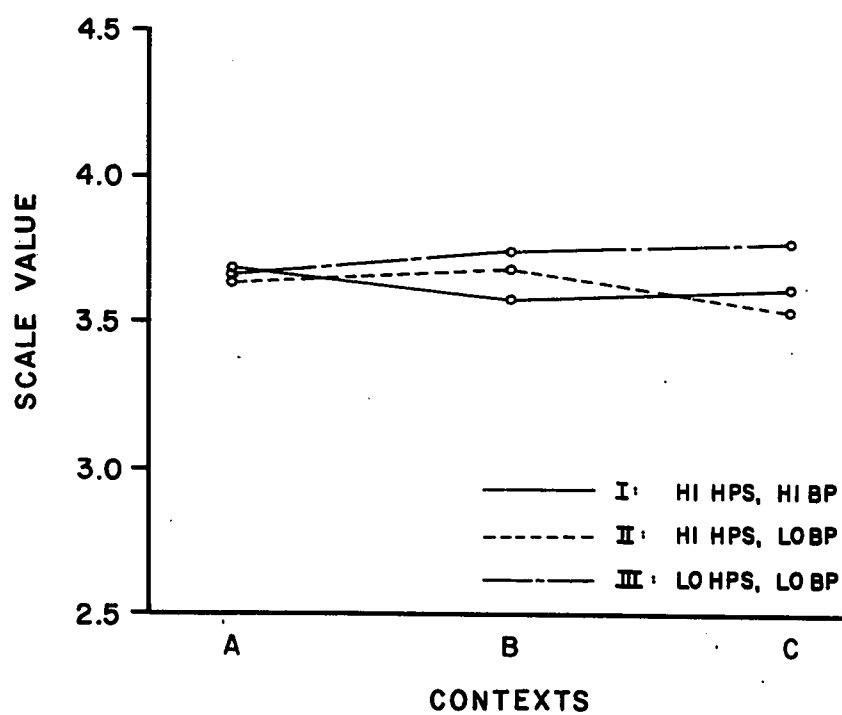


Fig. 5. Means of "pleasant" judgments by groups and contexts of content-only information.

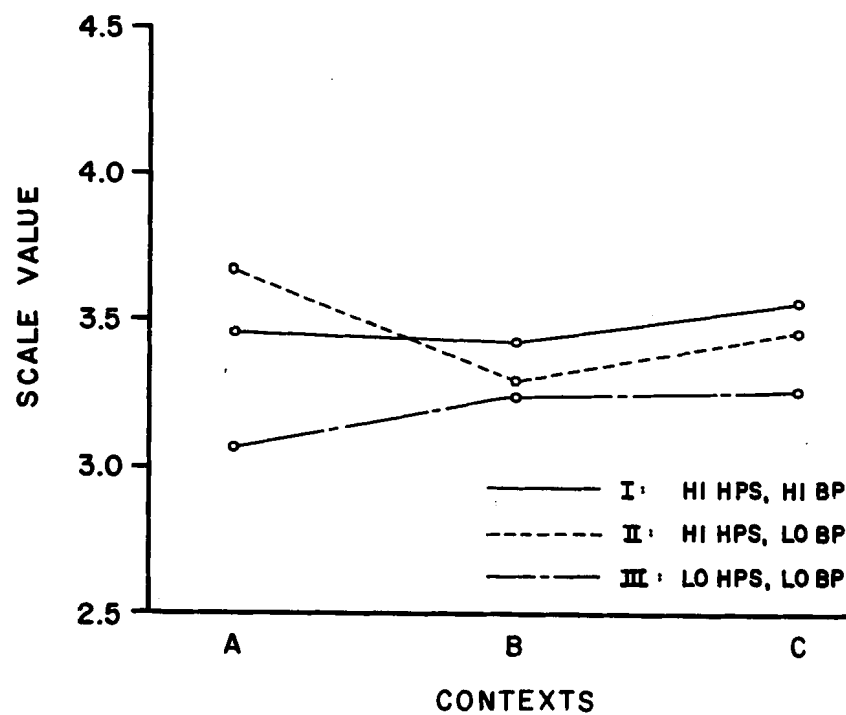


Fig. 6. Means of "pleasant" judgments by groups and contexts of normal information.

Table 12
Analysis of Variance of Mean "Pleasant"
Judgments of Content-free Information

Source	<u>df</u>	Mean Square	<u>F</u>
Between groups: I, II, III	2	187.910	---
Between subjects in the same group	27	301.636	
Between contexts	2	1.480	---
Contexts x groups	4	189.978	1.798
Pooled subjects x contexts	54	105.669	

Table 13
 Analysis of Variance of Mean "Pleasant"
 Judgments of Content-only Information

Source	<u>df</u>	Mean Square	<u>F</u>
Between groups: I, II, III	2	69.645	---
Between subjects in the same group	27	252.513	
Between contexts	2	6.745	---
Contexts x groups	4	35.245	---
Pooled subjects x contexts	54	223.757	

Table 14
Analysis of Variance of Mean "Pleasant"
Judgments of Normal Information

Source	<u>df</u>	Mean Square	<u>F</u>
Between groups: I, II, III	2	499.410	---
Between subjects in the same group	27	649.050	
Between contexts	2	62.980	---
Contexts x groups	4	130.678	---
Pooled subjects x contexts	54	165.309	

level for a significant difference from zero.

Agreement among judges was again used as an inverse measure of ambiguity for the "pleasant" judgments. The correlations were as follows: .27 for group I, .22 for group II, and .27 for group III. These are again all significant beyond the .01 level, but with little difference among groups. Contrary to expectation, judgments of group II are slightly less reliable.

On the whole, there was acceptable reliability of judging; the reliability was somewhat higher for "aggressive" than for "pleasant" judgments. Reliability estimates were slightly higher for normal than for content-free judgments; reliability of content-only judgments was low. The judgments for all types of information significantly differentiated the voices of the 30 subjects, as well as the three voice samples of each subject. In addition, there were significant interactions of voices and voice samples with information.

When the combined judgment of 25 judges was used as a measure, a large part of the results may be summarized as follows: (a) no differences were found in contexts B and C, (b) no differences were found for "pleasant" judgments, (c) no differences were found for judgments of content-only information. Differences which did appear ("aggressive" judgments in the A context) were between

groups which differed on HPS scores, when using judgments of content-free and normal information, and between groups which differed on BP scores, when using judgments of content-free information. No relationship was found between measures of congruence and ambiguity.

Discussion

Before it was possible to apply the judgments as a measure, it was of course necessary to demonstrate their reliability. Results have been presented indicating acceptable reliability of judging for all types of information: content-free, content-only, and normal. The reliabilities were somewhat higher for the "aggressive" judgments than for the "pleasant" judgments. Contrary to the expectation that isolated aspects of speech should be judged more reliably than normal speech, judgments of normal information were most reliable. However, content-free information was judged as reliably as normal information for "aggressive" judgments. A somewhat lower interjudge agreement for the isolated aspects of speech is not necessarily a disadvantage for their usefulness as personality measures, however, since judges' stereotypes may have greater influence on judgments of normal information.

The information available for judging

Since there is an overlap of information between the normal voice and either isolated aspect of voice, a higher correlation was to be expected between normal information and either isolated aspect than between the two isolated aspects themselves. The results bear out this expectation. In addition, judges seem to have paid more attention to the vocal than to the verbal component

when listening to the normal voice; that is, there was a higher correlation between the normal and the vocal than between the normal and the verbal judgments. The finding is in keeping with the expectation that vocal aspects of speech are more important for making expressive judgments, and that judges will therefore tend to pay more attention to the vocal aspects in listening to a normal recording.

The data give some evidence to justify the use of both "aggressive" and "pleasant" scales. Judgments on the two scales were unrelated for content-only information. For both kinds of audible information, however, they were highly related, with a higher correlation for normal than for content-free speech. A similar finding for normal speech was reported by Eisenberg and Zalowitz (5), who investigated judgments of "dominance feeling" from normal recordings. They found judgments of dominance generally correlated with favorable qualities, concluding that this was evidence of judging stereotypes and that judgments of voice could not be relied on for personality description. The bearing of our data on this point will be seen below.

Application of the combined judgments to selected subject groups

It will be recalled that one purpose of the present study was to investigate the possibility that inaccuracy in judgments of normal speech might be due to confusion between verbal and vocal

aspects. This confusion is expected to be especially severe if verbal and vocal aspects are incongruent. A reason for choosing prehypertensive subjects for this study was the possibility that they might show verbal-vocal incongruence, which would be shown by a negative correlation between the isolated verbal and vocal aspects of speech. A small negative correlation was present for the group with high blood pressure scores. This, however, was not a significant correlation, and another group with low blood pressure and low HPS scores was not greatly different. We have therefore not demonstrated a significant verbal-vocal incongruence for prehypertensive subjects. Furthermore, our measure of congruence does not seem related to a measure of ambiguity as defined by a lack of agreement in judgments of normal speech. This may seem to contradict the results of Kauffman (10) but it must be remembered that the judging scales and methods of measuring both congruence and ambiguity differ from his, and in addition, his voice samples were contrived to differ greatly in congruence.

"Aggressive" judgments of content-free and normal information did, however, differentiate the three groups. Judgments of content-free information were slightly more efficient in this differentiation. This is in line with the expectation that the presence of content might be a distraction for expressive judgments, although the advantage was slight. There is an element of contamination in the relationship between "aggressive" judgments and HPS scores,

since the same voice information available to our judges was also available to the original observers from whose Q-sorts on these subjects the HPS score was derived. It is surprising, however, that the aggressive-HPS relationship reappeared in an unequivocal way from 90 short speech samples, presented in a completely scrambled order to judges who knew nothing of the original situations.

An unexpected difference was that between the two groups with equally high HPS scores but differing in blood pressure. The voices of those with high blood pressure were judged less "aggressive" than those with low blood pressure. It is not clear how this should be interpreted. Perhaps the high blood pressure group was able to control or inhibit evidence of "aggression" in their voice but not in other cues used by the Q-sort observers.

Another unexpected finding was the effectiveness of the A context, in which all group differences were greatest. Since the A context was the first possible voice sample from the role-playing sessions, when the subject has just entered the situation and must explain his mission, this would seem to argue that the groups were more different when they began the role-playing than later in the sessions, and that entering a new situation had a greater effect than "stress" built into the plot. It should be pointed out, however, that the advantage of the A context was slight, as may be seen in Figs. 1 and 3. There was no significant difference between contexts nor a significant interaction of groups and contexts.

It may be concluded, overall, that judgments of the single stimulus type were obtained for isolated verbal and vocal speech information, as well as normal speech, which demonstrated adequate interjudge reliability. Further, judges tended to pay more attention to vocal than to verbal information when making expressive judgments from normal speech.

"Aggressive" judgments of audible material (in which the vocal aspect of speech is present) differentiated groups selected on a measure (HPS) which can be interpreted as a rating of aggressiveness. Although "pleasant" judgments were highly related to "aggressive" judgments of audible material, the "pleasant" judgments did not differentiate the groups.

It was not possible to demonstrate significant verbal-vocal incongruence in the speech of prehypertensive subjects. The prehypertensive subjects, however, were judged less "aggressive" from their voice than subjects with low blood pressure, even though these two groups had both been rated aggressive by observers with more cues available (HPS scores).

Summary

The vocal component of speech (tonal variation) is often considered more important than the verbal component (semantic content) as information regarding the personality of the speaker. The possibility arises that difficulty in judgments of personality from normal voice may be due to confusion between verbal and vocal aspects.

From this possibility the present study was designed for two purposes. The first was a comparison of judgments of isolated verbal and vocal aspects of speech to judgments of the same speech in its normal form where both aspects are present. The second was to compare the relative usefulness of the judgments for personality descriptions of subjects likely to develop essential hypertension, who are sometimes said to have difficulty in controlling their emotion and whose speech may therefore show verbal-vocal incongruence.

Three groups of ten subjects each were selected on the basis of their scores both on blood pressure recordings and on a personality score related to high blood pressure. For each of the subjects, three speech recordings, each 20 seconds long, were selected from the subjects' responses at particular points in role-playing sessions. These 90 speech samples were used as stimulus material

for judging in three forms which differed in the information available to the judges: a filtered content-free recording, a normal recording, and content-only, presented in typewritten form. For each type of information a separate group of 25 undergraduates judged all 90 voice samples on scales labeled "aggressive," and "pleasant."

It was found that reliability of judging was acceptable, with somewhat higher reliability for "aggressive" than for "pleasant" judgments. The judgments for all types of information significantly differentiated the voices of the 30 subjects, as well as the three voice samples of each subject. In addition there were significant interactions of voices and voice samples with information.

When the combined judgment of 25 judges was used as a measure, significant differences were found between groups for "aggressive" judgments of content-free and normal information of speech samples from the first role-playing situation. Judgments of content-free information was related to both the blood pressure measure and the personality measure associated with high blood pressure. Judgments of normal information were related only to the personality measure. The content-free information was only slightly more efficient than normal information for this particular personality description.

The group with high blood pressure scores did not show evidence of significant verbal-vocal incongruence. A measure of

ambiguity of judgments of the normal information did not significantly differentiate the groups, and no relationship was found between the measures of congruence and ambiguity.

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Appendices

Appendix A
Instructions Given Subjects in the
First Role-playing Session

You are Dan Rowland, a salesman for the Grindel Corporation, a nationally famous household appliance company. You are married, have two children, and make a comfortable living.

During the last year a number of arbitrary actions have been taken by the head office, among them the firing of the company salesmanager--a man who earned the respect and admiration of the entire sales force for his sincerity and honesty in all his dealing with superiors and subordinates.

As a result, the salesmen have met independently, and they have decided to determine the reasons for these incidents--what's behind them and why! They have chosen you as their representative to speak to T. Francis Penell, a vice-president of the company who is known to be the executive responsible for the firing, etc.

Mr. Penell's secretary has announced you. You may go in.

Appendix B
Instructions Given Subjects in the
Second Role-playing Session

You are Vincent Baylor, a young man who, as a result of your father's death, has inherited a large chain of retail stores. For four years you have been away in military service and you have recently returned as sole owner of your father's business. Your training and experience have quite adequately prepared you for this position; you are a graduate of the Harvard Business School and before the war you spent your school vacations working in this business.

Since assuming leadership of the business you have found many of the practices and policies of the company to be out of date, inefficient, time and money consuming. You are ready to put into effect some new techniques and policies which you believe will make for greater efficiency and economy.

The one obstacle to your proposed plans is Anthony Kiehl, the general manager. Kiehl has not gone along with the changes you are about to introduce although you have tried to convince him of their value and necessity.

At this point you think the best thing for the business might be to fire Kiehl, although you are thinking of other ways to handle the situation.

You have just notified Kiehl that you wish to see him. He is outside and ready to enter.

Order of Voice Samples on Derived Recordings

Presentation order	Sample No.	Subject	Context	Group
1	33	Buc	C	II
2	32	Buc	B	II
3	23	Pet	B	I
4	85	Wen	A	III
5	4	Cre	A	I
6	38	Pat	B	II
7	25	Smi	A	I
8	62	Dod	B	III
9	16	Our	A	I
10	71	Bur	B	III
11	9	Dav	C	I
12	36	Gar	C	II
13	83	Smo	B	III
14	8	Dav	B	I
15	43	Wor	A	II
16	39	Pat	C	II
17	77	Hus	B	III
18	61	Dod	A	III
19	59	Lea	B	II
20	70	Bur	A	III
21	51	Hub	C	II
22	74	Mel	B	III
23	34	Gar	A	II
24	19	Pay	A	I
25	47	Sta	B	II
26	17	Our	B	I
27	72	Bur	C	III
28	28	Whi	A	I
29	66	Pri	C	III
30	26	Smi	B	I

Presentation order	Sample No.	Subject	Context	Group
31	65	Pri	B	III
32	5	Cre	B	I
33	75	Mel	C	III
34	56	Bre	B	II
35	89	Mac	B	III
36	20	Pay	B	I
37	86	Wie	B	III
38	79	Mur	A	III
39	27	Smi	C	I
40	24	Pet	C	I
41	29	Whi	B	I
42	11	Dic	B	I
43	6	Cre	C	I
44	35	Gar	B	II
45	76	Hus	A	III
46	37	Pat	A	II
47	12	Dic	C	I
48	87	Wie	C	III
49	30	Whi	C	I
50	13	Mit	A	I
51	90	Mac	C	III
52	22	Pet	A	I
53	52	Wil	A	II
54	63	Dod	C	III
55	40	Pin	A	II
56	41	Pin	B	II
57	14	Mit	B	I
58	44	Wor	B	II
59	45	Wor	C	II
60	15	Mit	C	I

Presentation order	Sample No.	Subject	Context	Group
61	46	Sta	A	II
62	18	Our	C	I
63	48	Sta	C	II
64	58	Lea	A	II
65	53	Wil	B	II
66	81	Mur	C	III
67	55	Bre	A	II
68	60	Lea	C	II
69	82	Smo	A	III
70	64	Pri	A	III
71	1	Can	A	I
72	68	For	B	III
73	50	Hub	B	II
74	3	Can	C	I
75	88	Mac	A	III
76	57	Bre	C	II
77	7	Dav	A	I
78	42	Pin	C	II
79	78	Hus	C	III
80	73	Mel	A	III
81	31	Buc	A	II
82	80	Mur	B	III
83	84	Smo	C	III
84	21	Pay	C	I
85	10	Dic	A	I
86	54	Wil	C	II
87	2	Can	B	I
88	49	Hub	A	II
89	67	For	A	III
90	69	For	C	III

Appendix D
Content-only Material
Introductory Samples

68

- A ...decided, and elected me as their representative, to speak to you if possible and determine the shortcomings the salesmanager had, why it was determined that....
- B I've been thinking, since I returned from overseas, and more or less had this business turned over to me due to my dad's death, that, I wouldn't want to, I would like to justify my dad's faith in me by him leaving me....
- C Now, you have been with the concern, you working with it, closer to it a number of years than I have been. I've been away a bit. You've had many experiences that I haven't had. I have been interested in....
- D ...couldn't be interested in the position that was vacated through Mr. Jones' problem there unless we, all the salesmen have the background, the complete background on what the situation is. I couldn't declare myself available because that would certainly be under....

1. You've heard about my father's passing away recently of course, and, I've been left with the company now. And, as the general manager of course, you're, you're the man I've got to lean on to help me run this business.
2. Mr. Penell, I, I certainly appreciate that. I've, I've been with the company a relatively short time compared with some of the other boys but, I appreciate your interest it but, my, my problem right now is, our boy that's leaving us.
3. You have not yet said a thing as to why I came in here. You have not yet answered me. I think we, the salesmen, should have an answer from the executive staff. I'm sure that you realize that your salesmen are a most important group in your corporation.
4. Yes sir. The feature of my visit is rather difficult to discuss. But, I want you to know that I am representing the viewpoint of a number of other employees and not speaking on my own behalf strictly. We're quite concerned....
5. I'm representing a group of employees as to find out why the salesmanager was removed. So far as the employees are concerned his work has been satisfactory, in turning out the work and also in employee relationships.
6. I appreciate that Mr. Penell, but, I have worked with our former salesmanager for a long time, and, all us, the salesmen like him, respect him, and....
7. Yes, I, I imagine you know what I'm here for. A little bit of, morale, quite a morale problem here, among your salesmen. The reason that this morale problem is existing....
8. To be interested in a promotion, at this time, I think we oughta cross our bridges as we get to em here.

9. I was selected as representative on the salesmanager's behalf to see if we couldn't come to some conclusion or get some idea just why the vice-pres, or the salesmanager is being dismissed.
10. Well, the proposition is very flattering and it's very enticing I must say. But, Jones who was released was also a good man, Mr. Penell. Being the word hasn't got down or hasn't got out to the staff as to just why his, he was released. Now not that it's any business of, of theirs why he was released.
11. I'll tell you why. I've been in military service now for four years. I came back, and unexpectedly assumed control of the organization here. Naturally, being away for four years, in the service....
12. Returning to work, I, attempted to, put into, attempted to reorganize some parts of the business to, better, ... have a more efficient organization. And, some of the
13. Well I would certainly before, accepting the position, I would certainly require some time to think the matter over and further, I feel that we have two points
14. Yes sir, I appreciate the offer, the opportunity, and the consideration. However, I would like to talk about that at a little later time sir. My specific purpose this morning of getting the appointment with you sir, is, I'm representing the other salesmen sir, and I feel like, that I should if at all possible
15. I have been delegated by the salesmen to ascertain for our benefit certain facts. First I'd like to make it clear that we're not pressing you for answers. We would desire them
16. There's, several things I want to talk over with you. I know you've been with the concern for a number of years, and, as father's general manager you've done a wonderful job, carried out his policies to the letter. Now

17. I certainly appreciate the offer, and I likewise appreciate the faith of the, the head members of the organization have in myself.
18. I've been selected by the men to come in and talk to you for the group, concerning the salesmanager, who left the firm. Some of the men were....
19. Well certainly I'd be interested. However, my purpose today is as representative of the sales force, to see the reasons behind this, the firing of these two, three men who we thought were doing a good job for the company. And, we have a personal interest because
20. We have come together. I, when I say we I mean, the salesmen of the organization and I've been appointed as the head of this committee to see if we can't determine some reason, why, our good friend was discharged without any reason at all.
21. Well the problem here in the company. As you know I've been away for four years in military service. And I've inherited this business, it's mine, to run as I see fit. I feel that I'm qualified to run this business inasmuch as I practically grew up in it prior to my military
22. I feel that it's a good opportunity and I would jump at it. I feel that I have the ability and the background and the experience to take the job. I have been with you four years sir and, all of it has been in the field, as a salesman, and I have plenty of background in that field. However,
23. Yes, some of the salesmen have had a little gettogether and, we're rather disturbed, about the firing of the salesmanager. He, had the respect of all of us, and

24. The purpose of my visit is that I am representing the salesmen of our organization. And, they have all worked with parties who have been terminated. And I as a rep....
25. ...to discuss it, if possible today or, at your convenience. I would like you to give us a decision on this employee in question. Because the poor individual has worked hard for the company and he's deserving of a promotion, deserving an increase of salary. He's a very good salesman.
26. Yes sir, I definitely would, be interested, in an executive position. But, as I mentioned a while ago I'm here on behalf of the salesmanager and
27. Mr. Kiehl, I called for you this morning. You've been with the organization a long time. You know the way the organization operates from one end to the other. And, after taking over dad's business, I'm not too old. You are much older than I. But, times have changed.
28. We, as a group of salesmen, have got together, to find out why our salesmanager was let go. He had our admiration and we liked working for him and
29. I've been wanting to see you for quite a while, just haven't got around to talking to you. As you know you've been with the company a long time and, as you know I'm more or less new in this position, bestowed upon me and, have
30. ...worthwhile thinking about. Now, it's pretty far in the future. The main thing I want to do while I'm here is, get the facts behind the firing of these salesmen. Now, my fellow salesmen, evidently

31. Well, I would be, but, I would prefer to see this, the former manager returned. I feel as if the employees would be more happy.
32. Mr. Penell, I'd be quite happy to have the job. However, I'll still have to work with the people that are here and, if I go back and say I have the salesmanager's job, well then I've, so far as I'm concerned, let them down considerably, if I can say nothing further about as to why the previous salesmanager
33. I, I've been away for a long time and I respect your experience and your ability. And I want to keep you in the company. I feel that you're an asset to the, to me, and to the company, and I would like to see some way to iron out these differences whereby we can see eye to eye and work together.
34. Well, I'm very flattered, your confidence in my abilities. I'll certainly take it into consideration. However, there are a few things I'd like to know prior to making a decision.
35. Well getting back to the original subject prior to the time that, I answered that question, there are many people in the organization who have been with the organization much longer than I have. Rather than say yes I would prefer to take the more
36. Well sir, I think that the, what I would, prefer to have now is to take these subjects in turn. Now I'm very interested in advancement for myself personally. However, I would like to have the proper relationship between the management and also the
37. My answer to your question is, an unequivocal yes. I, I would be interested in the position and I appreciate your vote of confidence by even suggesting it. However, I, I believe that I can't be deterred from my initial
38. I'm at a little awkward disadvantage but, I've been chosen by the other salesmen in our company to speak to you about some matters and, ...

39. I hope I haven't taken you away from anything. In regards to these, improvements, changes in the, two departments I told you about, I notice that you haven't done anything about that as yet.
40. Mr. Kiehl, as you know, my father passed away, and I inherited the business my father had, these stores. I've been away for some time, just come back from the service, and I
41. Yes and no. I, I, well, let's put it this way. I am the new salesmanager for two years, a year. Another salesman has two, is top of the list for a couple of years, outstanding sales record. What happens to me?
42. Well, I'd like to consider that for awhile but, I'm still, I'm acting for the rest of the salesmen so I think we should, find out why, Mr. Jones was fired.
43. Returning to work, I'm tempted to put into, I'm tempted to reorganize some parts of the business to, better turn out the product, to have a more efficient organization. And, some of the policies
44. But, I'm getting back to the point, though, still, about the present, the one we just, we just let loose. He was in my opinion a very, qualified man and
45. The salesmen of the organization have, had a meeting, and we are trying to determine or find out the exact reasons for, the firing of our former vice-president.
46. I've been nominated as a committee of one to come to you and find out a few things that we as salesmen don't like. I believe in putting the cards on the table. We want to know why the salesmanager was fired, as well as

47. Yes, regarding your, attitude toward your job in the business, since I've taken over after my father's death, I've wanted to instigate a few new policies and you haven't went along with em. Well that
48. Yes, Mr. Kiehl, I have been forced to do a lot of thinking about the conduct of our business since the demise of my dad. And after looking over some sales reports, and
49. It's been on my mind for quite some time. I've given it considerable thought. This is on a delicate subject. I know how you feel towards the company. I know how you feel towards
50. Yes, we have a little difficulty in my sales section down there. The salesmanager was discharged, and we feel that an injustice was done that's affecting the morale of our corporation, in the field, and I thought I'd come to you with this problem.
51. We have these brief meetings, too infrequent as far as I can see. You have your job to do and, and, it keeps you away much of the time. I wish it were possible for us to arrange a, a meeting so
52. A group of us salesmen, in reference to, a, recent action, that, I understand was taken on your part, in the firing of one of the men. The, us salesmen, we got together
53. Yes, as a matter of fact I do. The salesmen of this organization have met outside, and have chosen me as a representative, to come to you and, first of all get some information.

54. Some of the, systems that I've put into effect since returning from the service, I don't believe you agree with wholeheartedly. I don't believe you're following the systems. We, gotta thrash
55. Mr. Penell, the, some of the other salesmen in the company and myself have met. We have a mutual problem that we feel concerns the entire company as well as ourselves and I wanted to talk to you about it. As you'll recall a short time ago Mr. Jones was dismissed from the company, for reasons that are unknown to us. We felt that he was a very good man, that he worked in the best interests
56. ... I'm very happy to make advancements and take increased responsibility, and I feel very flattered that the company, and a person in an executive position such as yourself would consider me for such a vacancy. And, I'd certainly be glad to take the vacancy. At the same time, I'd like to still keep my question to you foremost.
57. Yes sir, that will be fine. Now in regard to this other matter that, I originally made this appointment about, how do you feel about, reemploying Mr. Jones?
58. Well, at the present time, sir, I, I would like to reserve my right to make a decision. I feel that in line with the reason for my visit, apparently there are, it's a difference of opinion or aims
59. As you will recall our previous discussions, concerning the plans and policies to, I at least have been thinking very strongly of the stores. I realize very strongly that....
60. Mr. Kiehl, since the death of my father, we've been confronted with some problems. I know that, the way dad operated this business for many years, he went along, and he made an average profit. Things went along pretty well.

61. I'm the representative, for the sales people in the store, and here to arbitrate the matter, of an employee that was fired several days ago, and, a majority of the sales people and employees of the store, feel that he is a
62. Anthony, the reason I sent for you was to discuss some of our methods that I feel are possibly just a little out of date. And, I wonder if you have any, have been thinking over any ideas concerning our present operation.
63. ...to come in this afternoon and have a little chat with me and, I'd like to outlay some of the plans that I have for the store and, see what you think of them and get your idea on em. And, as you know I'm rather new and inexperienced at this business. I, what little I have gotten has been a long time ago and, my service
64. Because the, the, what we feel is rather unfortunate firing of one or two salesmen, one in particular who, who was felt was, certainly as good or, probably better than most of our group, I wondered, we wondered if, if, as the executive....
65. Not until I find out the, the reason for the arbitrary actions that have been taking place. I'm promoted up to the job, to either placate me or the salesmen. Then maybe next week I'm fired. I'd like to know why these actions have been taking place.
66. Mr. Kiehl, I'm quite concerned, called you in here. It's going to be a little difficult for me to say exactly what I want to say, not, that I'm afraid to say it, or not that, I'm afraid of hurting your feelings.
67. ...chosen as spokesman for, or act as a representative for, the entire sales organization, the rest of the personnel. We've come here, they've sent me here, to discuss, the recent....
68. ...without our differences, and, I feel that we're going to have to do this for greater efficiency, and we're going, just going to have to go ahead with the plans. And so far it seems that your office is the one that is, is most concerned with, more or less keeping things as they are.

69. I'm one of the salesmen for the appliance company. We held a rather quiet meeting amongst the salesmen to discuss a matter which is more or less personal in nature
70. He's very much respected by all the salesmen in the department and, he was recently fired and it is felt that it's caused the low morale in the department, because of this, and that it was felt that it was, an unjustified action.
71. We have a few problems we'd like to discuss and, actually, try to arrive at an understanding between ourselves and your staff. I don't come for personal reasons. I come as a representative of your entire staff there. We held a little meeting, not trying to hold
72. I would like to have it of course, but still, inasmuch as Mr. Smith was fired in, for no apparent reason, I believe that it would probably be bad for the company to put me in at this time, without a logical reason for the firing of Mr. Smith.
73. Well, that's not my prime interest in being here. I mean I appreciate you, your efforts and all. I appreciate the fact that you think I'm worthy of this. But, my prime reason in being here, and that is to determine why this man was fired. If the object in firing this man was just to make a vacancy for me, to me that would be unjustified.
74. I suppose you know, pretty much what this discussion is about. We've had a few differences of opinion prior to this and, I just wanted to call you in and come to some sort of understanding. Possibly you've been with the firm a long time and
75. The salesmen in the organization here have met and, and have appointed me as a representative for the group, to discuss the recent firing of our
76. A little matter I've been wanting to talk to you about. As you know, I haven't been back in the, I haven't been, held the business too long but I've been kinda getting my feet on the ground and, and kinda lookin around up until now, and I haven't made many changes here and there but,

77. Mr. Penell, we have representatives as you know in the field, and, there seems to be a little friction or resentment amongst the personnel, mainly we're not knowing why we lost our salesmanager. Of course, we realize that
78. Mr. Kiehl, we've gone over the, the program that I've outlined before, that I've outlined for increasing the efficiency of the business firm here. Just briefly I'll restate some of the facts I'm concerned about. We are expending too much effort for the end product we are getting. We're putting too much money into the business
79. I called you in, Mr. Kiehl, for consultation. I wanted to discuss some matters, pertaining to the business organization of our firm. As you know, the policies, some of the policies that used to be
80. Mr. Penell, it's not my habit to come in and see you, and when I do it's, a major consequence. So, I would like to discuss this problem with you. As you can see I'm very nervous, upset, and I'm unsure of the consequences, and you realize that I'm staking my reputation, my job, and my family on this. So,
81. We're a little concerned over, over, John Doe's leaving the company. And, we've all worked with John a long time. We know him. We like him very well. And, we're just a little concerned for his future security and so on and so forth and
82. No sir, I'm sure that my family would be pleased. And I'm very, gratified and, and in fact it does come as quite a shock and surprise. And I would
83. Mr. Kiehl, since returning back to the business, I've made a thorough check of your records, and your service, and we've had some discussions before on changes.
84. As you know, you've been with the company quite a while. And, I appreciate everything you've done for the company. However, there are certain changes that I proposed and I understand that

85. I've been appointed as representative by the salesmen of the company acting independently, to discuss with you the firing of Mr. Penell, or Mr. Jones. It seems that, the salesmen
86. For eleven of those years you worked for my father. How'd you and my father get along?
From the time you started until the present time have you seen any, changes made in the, in the stores, in the merchandising?
87. At the present time, I, I'd like to come back to the original issue. I mean that's a very fine offer and it's, worthy of thought. I would like time to consider it in view of the present happenings. But primarily, I, I'm not here on a personal errand.
88. ...to, one of our employees, a fellow employee I should say, and it seems that he was fired for, conditions that, which we should like to question you about. I represent a party here of fellow employees from the company
89. The salesmen and I, have gotten together and we had a little meeting and, we're interested in finding out just why Mr. so and so got fired. And, I believe it would be to the best interests of the company as well as
90. I wanted to see you about the sales, get some general ideas about what you think. I just wondered how you would, go about or rather how you think we can improve the sales of our produce.

Judging Forms

CF CO N

(last name)

(first name)

No. Pleasant

Aggressive

No. Pleasant

Aggressive

A			C		
B			D		

PRACTICE

OF CO N

(last name) (first name)

No. Pleasant Aggressive No. Pleasant Aggressive

1		16		
2		17		
3		18		
4		19		
5		20		
6		21		
7		22		
8		23		
9		24		
10		25		
11		26		
12		27		
13		28		
14		29		
15		30		

CF CO N

(last name) (first name)

No.	Pleasant	Aggressive	No.	Pleasant	Aggressive
31			46		
32			47		
33			48		
34			49		
35			50		
36			51		
37			52		
38			53		
39			54		
40			55		
41			56		
42			57		
43			58		
44			59		
45			60		

CF CO N

(last name) (first name)

No.	Pleasant	Aggressive	No.	Pleasant	Aggressive
61			76		
62			77		
63			78		
64			79		
65			80		
66			81		
67			82		
68			83		
69			84		
70			85		
71			86		
72			87		
73			88		
74			89		
75			90		

Appendix F

Instructions: Content-free Material

You are to be a judge of certain characteristics of voices. We are not studying your individual ability to do this, but your judgments will be used as measures of the voices, and must be the best judgments that you can make.

On each of three days you will listen to 30 voices, each one speaking for 20 seconds, with a ten second silence between them. The voices have been filtered so that you will not hear what they are saying. You will hear only a low mumble. It will be difficult not to imagine words, but your job is to disregard this, and to mark down two numbers for each voice, one indicating whether the voice seems unpleasant, indifferent, or pleasant; the other indicating whether the speaker sounds submissive, or tends to be aggressive and dominate the conversation. Use numbers corresponding to positions on the two scales in front of you.

Differences between the voices are slight, and you will have to pay close attention in order to detect them. Try to mark a range of scores to describe the small differences. We desire your personal reaction, as though you were in a conversation with each person.

There will be four practice voices to let you hear how they sound. Be sure to write in two numbers for each voice you hear.

Instructions: Content-only Material

You are to be a judge of certain characteristics of written records of speech. We are not studying your individual ability to do this, but your judgments will be used as measures of the speech, and must be the best judgments that you can make.

On each of three days you will judge 30 speech samples. Your job will be to mark down two numbers for each sample, one indicating whether the sample seems unpleasant, indifferent, or pleasant; the other indicating whether the speaker seems submissive, or tends to be aggressive and dominate the conversation. Use numbers corresponding to positions on the two scales in front of you.

Differences between the samples are slight, and you will have to pay close attention in order to detect them. Try to mark a range of scores to describe the small differences. We desire your personal reaction, as though you were in a conversation with each person.

There will be four practice records to let you see what they are like. Be sure to write in two numbers for each sample.

Instructions: Normal Material

You are to be a judge of certain characteristics of voices. We are not studying your individual ability to do this, but your judgments will be used as measures of the voices, and must be the best judgments that you can make.

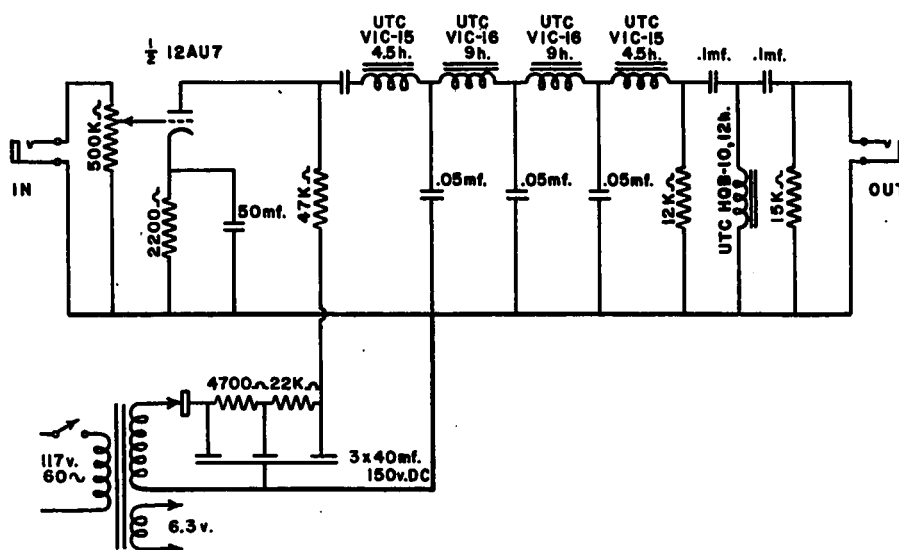
On each of three days you will listen to 30 voices, each one speaking for 20 seconds, with a ten second silence between them. Your job will be to mark down two numbers for each voice, one indicating whether the voice seems unpleasant, indifferent, or pleasant; the other indicating whether the speaker sounds submissive, or tends to be aggressive and dominate the conversation. Use numbers corresponding to positions on the two scales in front of you.

Differences between the voices are slight, and you will have to pay close attention in order to detect them. Try to mark a range of scores to describe the small differences. We desire your personal reaction, as though you were in a conversation with each person.

There will be four practice voices to let you hear how they sound. Be sure to write in two numbers for each voice you hear.

Appendix G

Electronic Filter Passing 100-450 cps.



Means of "Aggressive" Judgments from Content-free
Information of Individual Voice Samples

Sample No.	Mean	Sample No.	Mean	Sample No.	Mean
1	2.96	31	3.44	61	2.08
2	3.48	32	3.64	62	2.52
3	3.80	33	3.32	63	2.88
4	2.64	34	3.16	64	2.04
5	4.48	35	3.04	65	1.68
6	3.36	36	2.60	66	2.48
7	3.68	37	4.68	67	2.68
8	4.84	38	2.96	68	3.64
9	4.04	39	4.36	69	3.00
10	3.60	40	5.76	70	3.64
11	1.76	41	4.76	71	4.40
12	3.92	42	5.40	72	2.96
13	3.60	43	4.24	73	3.76
14	2.60	44	3.20	74	3.16
15	4.32	45	3.36	75	4.04
16	2.60	46	3.60	76	2.12
17	1.60	47	4.64	77	1.92
18	3.36	48	3.68	78	2.88
19	4.04	49	4.36	79	3.08
20	3.72	50	5.40	80	2.00
21	2.44	51	4.52	81	2.36
22	4.04	52	3.84	82	1.68
23	4.40	53	4.84	83	2.76
24	3.28	54	4.56	84	2.80
25	1.80	55	3.08	85	3.84
26	3.96	56	2.32	86	4.44
27	3.92	57	4.04	87	4.80
28	3.84	58	3.92	88	2.84
29	4.56	59	3.60	89	3.64
30	3.28	60	3.60	90	3.96

Means of "Aggressive" Judgments from Content-only
Information of Individual Voice Samples

90

Sample No.	Mean	Sample No.	Mean	Sample No.	Mean
1	4.00	31	3.08	61	4.12
2	3.48	32	2.92	62	4.08
3	4.44	33	2.60	63	4.92
4	4.80	34	3.84	64	4.24
5	3.84	35	3.76	65	3.56
6	4.16	36	3.44	66	2.92
7	3.24	37	5.40	67	4.52
8	4.04	38	4.04	68	3.88
9	4.20	39	7.88	69	3.60
10	4.28	40	4.48	70	4.00
11	4.20	41	4.68	71	3.24
12	4.80	42	4.68	72	4.20
13	3.76	43	4.00	73	2.88
14	4.36	44	3.76	74	4.88
15	4.08	45	4.04	75	3.48
16	4.48	46	4.76	76	4.80
17	4.32	47	4.04	77	3.16
18	4.12	48	3.36	78	4.60
19	3.72	49	3.92	79	2.64
20	4.40	50	4.80	80	2.64
21	4.60	51	5.20	81	3.16
22	2.92	52	4.80	82	4.08
23	5.48	53	5.08	83	3.64
24	3.08	54	4.24	84	4.32
25	3.84	55	3.08	85	4.64
26	4.84	56	4.28	86	4.04
27	3.96	57	2.32	87	4.16
28	4.44	58	2.20	88	4.40
29	3.68	59	4.92	89	3.00
30	3.40	60	4.00	90	4.04

Means of "Aggressive" Judgments from Normal
Information of Individual Voice Samples

Sample No.	Mean	Sample No.	Mean	Sample No.	Mean
1	4.08	31	4.16	61	2.24
2	3.96	32	3.72	62	2.00
3	3.52	33	3.72	63	2.96
4	3.08	34	3.28	64	2.68
5	4.56	35	2.96	65	1.96
6	2.64	36	1.96	66	2.48
7	4.72	37	5.28	67	3.56
8	5.04	38	3.08	68	4.04
9	3.64	39	4.28	69	2.80
10	3.08	40	5.40	70	3.32
11	1.88	41	4.24	71	4.84
12	3.84	42	5.36	72	4.08
13	4.44	43	3.96	73	2.88
14	3.68	44	3.84	74	4.48
15	4.60	45	3.68	75	4.68
16	3.36	46	3.56	76	3.80
17	1.56	47	4.68	77	2.68
18	4.24	48	4.04	78	3.16
19	3.40	49	4.56	79	2.84
20	3.48	50	5.48	80	2.96
21	2.00	51	4.92	81	3.36
22	3.68	52	4.60	82	1.76
23	4.76	53	3.88	83	3.52
24	3.48	54	3.84	84	2.44
25	2.44	55	3.32	85	4.12
26	3.72	56	3.12	86	4.52
27	3.60	57	2.92	87	4.60
28	4.52	58	3.48	88	2.08
29	4.84	59	3.84	89	3.20
30	4.56	60	4.92	90	2.84

Means of "Pleasant" Judgments from Content-free
Information of Individual Voice Samples

Sample No.	Mean	Sample No.	Mean	Sample No.	Mean
1	3.80	31	2.88	61	1.96
2	3.72	32	3.56	62	2.36
3	3.32	33	3.20	63	3.00
4	3.00	34	2.96	64	2.64
5	3.52	35	3.20	65	3.28
6	2.92	36	2.28	66	2.96
7	4.04	37	4.28	67	3.40
8	4.44	38	3.16	68	3.08
9	3.44	39	3.48	69	3.32
10	3.88	40	3.80	70	3.76
11	3.04	41	3.76	71	4.36
12	3.92	42	4.00	72	3.08
13	3.32	43	3.68	73	3.48
14	2.60	44	3.32	74	3.36
15	3.08	45	3.12	75	3.84
16	3.52	46	3.00	76	3.12
17	2.64	47	3.12	77	3.04
18	3.72	48	3.68	78	3.96
19	3.16	49	4.16	79	3.44
20	3.56	50	4.20	80	2.72
21	2.88	51	3.64	81	3.00
22	3.96	52	2.88	82	2.28
23	4.08	53	3.36	83	1.84
24	3.36	54	2.72	84	3.32
25	2.32	55	3.20	85	3.60
26	3.12	56	3.40	86	3.00
27	2.72	57	3.28	87	4.04
28	3.28	58	3.12	88	3.12
29	3.68	59	3.24	89	3.72
30	2.96	60	3.48	90	3.80

Means of "Pleasant" Judgments from Content-only
Information of Individual Voice Samples

Sample No.	Mean	Sample No.	Mean	Sample No.	Mean
1	4.00	31	3.28	61	4.04
2	4.08	32	3.56	62	2.72
3	3.72	33	3.88	63	3.08
4	3.88	34	3.72	64	3.44
5	3.96	35	3.00	65	3.80
6	3.56	36	2.96	66	3.80
7	3.52	37	3.20	67	3.56
8	3.96	38	3.96	68	3.40
9	3.36	39	5.08	69	4.52
10	3.72	40	4.76	70	3.28
11	3.44	41	4.76	71	3.40
12	2.48	42	3.68	72	3.64
13	4.64	43	4.20	73	2.48
14	4.24	44	3.40	74	3.84
15	3.56	45	3.44	75	4.72
16	4.00	46	3.48	76	3.76
17	4.12	47	4.16	77	4.68
18	4.56	48	4.40	78	4.12
19	3.92	49	3.60	79	3.72
20	3.44	50	3.68	80	4.32
21	3.52	51	2.64	81	2.76
22	2.76	52	3.76	82	4.16
23	2.28	53	2.24	83	3.48
24	4.24	54	3.72	84	3.44
25	3.12	55	3.40	85	4.08
26	3.56	56	4.52	86	4.00
27	3.32	57	2.64	87	3.88
28	3.32	58	3.00	88	4.24
29	2.80	59	3.64	89	3.72
30	3.76	60	2.84	90	3.80

Means of "Pleasant" Judgments from Normal
Information of Individual Voice Samples

Sample No.	Mean	Sample No.	Mean	Sample No.	Mean
1	3.84	31	3.64	61	2.24
2	4.20	32	3.56	62	1.84
3	3.72	33	3.32	63	2.48
4	2.52	34	3.28	64	3.04
5	3.44	35	2.28	65	2.88
6	2.64	36	2.16	66	3.00
7	4.12	37	4.44	67	3.04
8	4.56	38	2.68	68	3.36
9	2.80	39	3.88	69	2.84
10	2.92	40	4.72	70	3.28
11	2.32	41	3.64	71	3.76
12	3.32	42	3.84	72	3.76
13	4.08	43	3.20	73	2.96
14	3.48	44	2.96	74	4.08
15	4.24	45	2.68	75	4.72
16	3.60	46	3.60	76	4.24
17	2.28	47	4.04	77	2.92
18	4.08	48	4.68	78	2.84
19	3.32	49	4.20	79	3.72
20	2.56	50	4.44	80	3.48
21	2.16	51	3.96	81	3.72
22	3.28	52	3.12	82	2.24
23	3.60	53	2.84	83	3.00
24	3.64	54	2.48	84	2.36
25	2.84	55	3.60	85	4.16
26	3.72	56	3.32	86	4.20
27	3.96	57	3.64	87	4.16
28	4.16	58	3.00	88	1.92
29	4.04	59	3.24	89	2.96
30	4.60	60	4.00	90	2.80

Vita
John A. Starkweather

Born:
Detroit, Michigan, August 30, 1925

Education:

U. S. Coast Guard Academy	1945-1946	
University of Washington	1946-1947	
Yale University	1947-1950	A.B., 1950
Union College	1950-1951	
Northwestern University	1951-	M.A., 1953

Experience:

U. S. Coast Guard, Radio and Radar Technician, August, 1943 to June, 1945.

Graduate Assistant, Northwestern University, June to August, 1952.

Extern in Clinical Psychology, Northwestern University Medical School, September, 1952 to June, 1953.

U. S. Public Health Fellow in Clinical Psychology, Northwestern University, September, 1952 to June, 1953; September, 1954 to June, 1955.

U. S. Public Health Fellow in Clinical Psychology (Intern), University of California School of Medicine (The Langley Porter Clinic), July, 1953 to June, 1954.

Assistant Research Psychologist, University of California School of Medicine, July and August, 1954.

Lecturer in Psychology, University College, Northwestern University, February to June, 1955.

Societies:

Sigma Xi
American Psychological Association
Midwestern Psychological Association
Western Psychological Association
California State Psychological Association

Publications:

A test for conditioned inhibition in motor learning.
J. exp. Psychol., 1954, 47, 351-356. (with G. P. Duncan)