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AN EXPERIMENTAL STUDY
OF
THE RELATIONSHIP BETWEEN PERCEIVED NASALITY
AND
JUDGMENTS OF PERSONALITY

By

Linda Kobitisch

B.A., University of Montana, 1969.

Presented in partial fulfillment of the requirements

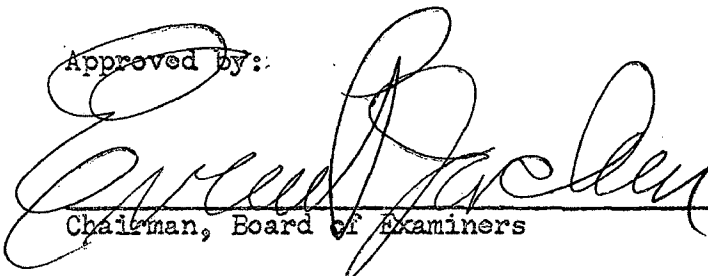
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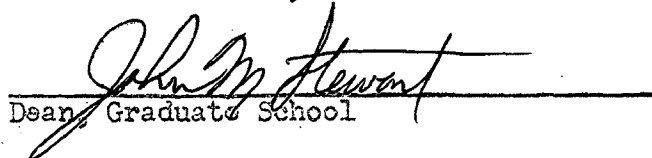
Master of Arts

UNIVERSITY OF MONTANA

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CHAPTER I

INTRODUCTION

Defined acoustically, "voice quality is a property of all voiced intervals, but is significant primarily during vowels. Its acoustic bases are found in the spectrum, co-existent with the displays that comprise the phonetic code". (Fairbanks, 1960, p. 170) Vocal quality is that component of voice which differentiates one voice from another. Physiologically, voice quality is a product of the interaction of the sound source (larynx) and its resonators (pharyngeal, oral and nasal cavities). The structure and condition of the laryngeal musculature (length, mass, tension of the vocal folds) determine the basic fundamental tone and its harmonics. Superposed on the fundamental tone are the harmonics or the overtones. These harmonics or overtones are damped or amplified according to fluctuating sizes and shapes of, and relationships among, the pharyngeal, oral and nasal cavities during phonation. This selective repression and encouragement of harmonics is an important source of the distinguishing characteristics of the voice - its quality.

"Voice is one of the most characteristic expressions of the individual personality and of the changes of emotions and moods occurring in the daily life of a person." (Brodnitz, 1965, p. 42) "It is by the delicate nuances of voice quality that we are so often confirmed in our judgments of people." (Sapier, 1927, p. 895) Through such statements as those just quoted, many authorities have voiced a common feeling that voice quality reveals the personality and that deviations of voice quality were associated with personality differences. Moses (1954, p. 1), for example says, "Through voice alone, neurotic patterns can be discovered".

Through experimental studies, low social adjustment and inefficient use of voice quality have been found to be positively correlated. Duncan (1945) for example, found that a larger number of a group of college students with harsh or hoarse voice quality showed unsatisfactory scores on the Bell Adjustment Inventory than was the case for a matched group of students with normal voice quality; 45% of the students with harsh or hoarse voice quality as compared to 14% of the students with normal voice quality showed poor home adjustment scores.

Moore (1939) compared how college students with defective quality rated their performances in a public speaking class against how they were rated by the class instructor. Persons with breathy voice quality tended to rate their speeches lower than the ratings given by the class instructor. Persons with metallic, whiney and harsh voices tended to rate their speeches higher than they were rated by the instructor. These results indicate that breathy voices may be associated with submissiveness, while harshness is associated with a higher level of aggressiveness.

Diehl, et.al. (1959) studying the effects of anxiety on voice quality using the Taylor Manifest Anxiety Scale, found that persons with hoarse-breathy voices are more anxious than persons with normal voices or persons with harsh voices. Both Moses (1954) and Brodnitz (1968) agree that since communication is basic to social living, and the voice is a major vehicle of human communication, the voice unavoidably registers the frustrations of social interactions. For example, an unhealthy parent-child relationship may create frustrations for the child who is infrequently allowed to experience success. The vocal apparatus is affected by attempts at overcoming frustration and in those attempts, new burdens are placed on the

voice often revealing information about the unconscious dynamics, fears, anxieties and emotional conflicts of the individual.

Particular kinds of voice qualities have been thought to reveal particular personality attributes. "Thin", "oral" voices among women have been considered to be symptoms of lack of maturity, unwillingness to accept social responsibility, and desire to cling to childish dependence. (Duncan, 1945) Depressed persons are felt to reveal their depressions in their voices. They tend to exhibit "quiet", "dull", "lifeless" voices which sound like "pathetic whimpers". (Hargreaves, Starkweather and Slacker, 1965)

A person with a breathy voice is thought of as high in neurotic tendencies and introversion. Persons with harsh and metallic voices tend to have dominant and emotionally stable personalities. (Moore, 1939)

Schizophrenics are said to exhibit a decreased nasal resonance, while manic depressives express nasal resonance marked as giving the voice a "warmer feeling". (Moses, 1945)

A "sort of whine" with or without nasality, is often equated with the immature, demanding and childish aspects of the person. The basic assumption here is that a whine is an expression of aggression at a neurotic level, and nasality in the absence of organic factors is considered to be a characteristic expression of aggression. (Rousey and Moriarty, 1965) The speaker with "nasal whine" or "twang" (Moore, 1939; Ecroyd, et.al., 1966) tends to be characterized as showing "emotional instability" and "low dominance", although somewhat more dominance than the breathy speaker.

It is commonly assumed that man, in spite of himself, reflects his mood, temper and personality through his voice; in the words of two early investigators of personality, "Voice expresses the character of the man". (Allport and Cantril, 1934)

DEFINITION OF TERMS

Because of its common occurrence as a voice problem requiring the services of a speech clinician, nasal resonance, in relation to those personality attributes associated with it will be the prime consideration of this study. The term nasality calls to mind a number of other terms, all of which refer to some aspect of nasal resonance. The terminology and its use differ from authority to authority. For the purpose of this discussion of nasality, these terms will be used as defined below.

Normal Voice. The normal voice should possess certain minimal characteristics of pitch, loudness and quality, which make meaning clear, arouse the proper emotional response, and ensure a pleasant tonal effect upon the hearer. (Berry and Eisenson, 1956, p. 189)

Nasality. The characteristic vocal quality caused by excessive nasal resonance in proportion to the resonance contributed by other resonance chambers respectively during vocalization. (Glasgow, 1944, p. 337)

Positive nasality: That condition in which the quality of the voice results from an excessive amount of resonance in the nasal cavities. (West, et.al., 1959, pp. 444-445)

Hypernasality: Excessive nasality. (Van Riper and Irwin, 1958, p. 239) Positive nasality. (West, et.al., 1959) The presence of more nasal resonance than is culturally acceptable.

Rhinolalia aperta: Positive nasality.

Denasality.

Negative nasality: An absence of, lessening of normal nasal resonance. (West, et.al., 1959, p. 445)

Rhinolalia clausa: Negative nasality. (Van Riper, 1947, p. 24)

Hyponasality: (denasal, adenoidal voice, rhinolalia clausa)

The speaker cannot utter the nasal sounds through the nose. The voice quality is deadened, muffled, as though its owner had a perpetual cold or post-nasal drip. (Van Riper, 1947, p. 24)

Nasal Twang. A vocal quality produced by partial occlusion. Also, tensions at any point in the supraglottal region, or vibration of tense aryepiglottic folds or the epiglottis itself, or violent contraction of the larynx with a narrowing of the laryngeal aperture may superimpose vibrations of a high frequency, all of which may be interpreted by the listener as nasal twang. (Berry and Eisenson, 1956, p. 218)

RELATED LITERATURE

Excessive nasality or hypernasality is considered to be the most common of speech problems. (West, et.al., 1959) Fairbanks stated that although nasality is found in what are often termed "bad" voices, mild nasality is heard in many good voices. This author is in agreement with those authorities (Fairbanks, West, et.al.) who believe that both positive and negative nasality are matters of perception by the listener, and exist as voice problems only when they become so conspicuous as to draw unfavorable attention to the speaker by being objectionable to the listener. It seems only reasonable that listener perceptual judgments should serve as guides to the speech clinician with reference to the actual determination of the

existence of a voice problem requiring special help. Similarly, progress in the elimination of a deviant quality may be evaluated in terms of listener judgments. Perceptual judgments should be of utmost consideration in planning therapy procedures and establishing goals.

Accepting nasality as a perceptual phenomenon, Kantner and Moll agree that the final decision as to whether an individual is nasal can be reached through subjective judgment. This being the case, the more valid indices of nasality involve listener perception. (Spriestersbach and Sherman, 1968) Curtis says that "nasalization may be said to occur when the coupling between the oral-pharyngeal and nasal portions of the vocal tract system is increased sufficiently to produce a perceptually significant change in the speech signal". (Spriestersbach and Sherman, 1968, p. 45) Again, it should be emphasized that nasality is being here defined solely in perceptual terms; nasality is considered a perceptual phenomenon based on listener judgments. Curtis, in making the above statement, which includes a physical aspect in the definition of nasality, makes an assumption that perceptual events need and/or are associated with some physical events, namely the amount of velopharyngeal closure. It is this author's belief that there is no need to presume a relationship between nasality and velopharyngeal opening, if, as this study uses the term, the sole judgment of nasality is found in the subjective judgment of listeners. It is, then, not the concern of this study to deal with physiological aspects of nasality.

Several authorities consider nasality bad. Too much nasality is not good because it is said to be unpleasant, detrimental to intelligibility, expresses aggression, immaturity, etc. (Moser, et.al., 1955; Van Riper, 1958; Fairbanks, 1960) It is said that insufficient nasality is not good.

These same authorities agree that some nasal resonance is necessary for normal voice quality. Therefore, varying degrees of nasality from hyper- to hyponasality are crucial factors in the consideration of judgments of nasal resonance. Cultural norms and acceptance of the degrees of nasality obviously are important variables. Again, it can be said that nasality becomes a voice defect when the perceived nasal resonance exceeds or falls below the cultural cut off of acceptance. (Rousey and Moriarty, 1965; Van Riper, 1958)

STATEMENT OF THE PROBLEM

Do people associate varying degrees of perceived nasality with various personality attributes? Is there a relationship between degree of the perceived nasality and intensity of attitude judgments toward that perceived nasality? A survey of the literature reveals much agreement that there is a relationship between nasality and personality attributes, but the direction and intensity of this relationship has not been experimentally examined. Survey of the literature does not reveal a study in which intensity ratings of various vocal and personality attributes, e.g. pleasantness and unpleasantness were obtained and associated with perceived nasality. Several other possible perceptual associates of perceived nasality suggest themselves: masculinity, warmth, independence, happiness and complainingness. The plan of this study was to obtain judgments of amounts of given vocal and personality attributes exhibited in various voices and relate these measures to ratings of degree of perceived nasality in the same voices.

HYPOTHESIS

Various amounts of nasality are perceived as being associated with particular personality attributes.

CHAPTER II

PROCEDURES

Ratings of degrees of perceived nasality were secured from some prepared tape recorded samples of four experimentally produced types of vocal quality. (Debertin, 1970) These samples were used in the present study for the purpose of obtaining personality judgments. Listeners were asked to make personality judgments of speech samples recorded by three speakers under various experimental conditions. The procedures for preparation of the tape recorded voice samples are described in detail below.

EXPERIMENTAL SUBJECTS

Adult males with "normal" speaking voices were used as subjects for the preparation of the voice samples. Four types of voice quality were sampled from each of the three subjects: "normal", hypernasal, hyponasal, and "nasal twang". (a) The "normal" voice quality was obtained from each of the "normal" speaking subjects prior to experimental modification of their speech mechanism. (b) The aid of a board-certified otolaryngologist was obtained to create two anatomical conditions usually felt to be causally associated with two of the types of nasality. (c) Inadequate velopharyngeal closure was created by holding the soft palate down, with the aid of rubber tubing, making it impossible for the subject to obtain velopharyngeal closure during his speech. The purpose of this procedure was to simulate hypernasal voice quality due to inadequate velopharyngeal closure. (d) The second anatomical condition was artificially created by obstructing the posterior portion of the nasal passages by filling the nasopharynx with an inflated bulb. This procedure resulted in a voice quality devoid of nasal

resonance and often termed "hyponasality". (e) In producing the fourth vocal quality ("nasal twang"), a vocal model produced by a speech pathologist was imitated and practiced by the subjects until the desired quality was obtained.

These four vocal qualities were tape recorded on a four track stereophonic tape recorder at seven and one-half inches per second, and submitted to ten judges for evaluation as to degree of perceived nasality following a method of paired comparisons. The judges compared each pair of samples, judging which of each pair was more nasal. The procedures of the present study are as follows.

Tape recordings were obtained of four oral reading performances of each subject:

1. A reading in the subject's "normal" voice with unmodified vocal mechanism.
2. A reading in the hypernasal voice associated with inadequate velopharyngeal closure.
3. A reading in the hyponasal voice associated with the nasopharyngeal obstruction.
4. A reading in the simulated "nasal twang".

EXPERIMENTAL SAMPLES

The experimental speech samples consisted of ten-second segments of speech selected from the last of ten readings of a standard passage (see Appendix A) under each of the above four experimental conditions. In total, there were twelve ten-second voice samples: four types of voice quality, each produced by three subjects. These twelve samples were

paired systematically according to a procedure described by Ross (1934) and used by Debertin (1970). Ross' ordering provides that every given pair appears twice, once with the segments in one order and secondly with the order of segments reversed. Further, pairs involving the same segments are a maximum distance apart.

Results of such a pairing procedure would yield 144 paired samples. Of this total, twelve pairs were eliminated (resulting in 132 paired samples) because these twelve would have involved comparing each subject with himself. The experimental tape was audited by listeners who were to evaluate each pair of speech samples in terms of one vocal attribute, pleasantness; and five personality attributes: happiness, masculinity, independence, complainingness and warmth. These 132 pairings of the twelve 10-second experimental speech samples constituted the experimental tape used in the present study.

LISTENING PROCEDURES

Each pair of samples was presented to the listeners in the following manner:

1. The number of the pair was given on the tape recording and the listener was required to find the corresponding number on his rating sheet (see Appendix B)
2. The first speech segment of that pair was then presented.
3. A one-second pause followed.
4. The second segment of the pair was presented.
5. A five-second pause allowed listeners to make their decision.
6. Each and every pair of segments was presented to and recorded by the listeners in the above described manner.

Sixty judges listened to the 132 pairs of speech samples on a TC 230 Sony stereo tape recorder at seven and one-half inches per second and indicated which one of each pair exhibited most of the particular vocal or personality attribute. The judges for this study were sixty college students selected from the general college population and from beginning speech pathology and audiology classes at the University of Montana. The sixty judges were randomly divided into six subgroups of ten judges each. Each subgroup judged the 132 pairs with respect to one of the six attributes. For example, subgroup number one judged the speech samples with respect to the degree of "happiness" exhibited; subgroup number two judged the speech samples with respect to the degree of "independence" exhibited, etc.

The above procedure yielded ten judgments of a given attribute for each pair of the 132 paired speech samples. Respecting the attribute "warmth", for example, each of the 132 pairs of speech samples received ten judgments reflecting which member of each pair exhibited the most warmth; member A may have been perceived as more warm than member B by seven of the ten judges, for example.

Immediately preceding the experimental judging of speech segments, a short training procedure took place. (see Appendix A) Five pairs drawn at random from the experimental tape were presented to the judges. The judges were told to compare the members of each pair using the experimental procedure, but were permitted to ask questions, voice frustrations, etc. during this training procedure. Following this, the experimental tape was presented. No questions were allowed during the presentation of the experimental tape.

CRITERIA FOR SELECTION OF LISTENERS

1. The listeners were beginning communication and speech pathology majors and college students from the general college population.
2. They were to be relatively naive to the purpose of the study.

CHAPTER III

RESULTS

The data obtained from listener judgments were interpreted according to Thurstone's Law of Comparative Judgments, Case V, which utilized the assumption that all discriminial dispersions are equal. This method of deriving scale distances from the judgments obtained in the method of paired comparisons is described in full by Guilford (1936, pp. 226-228). The raw data, the proportions derived from the raw data, and the standard scores derived from the proportions appear in Appendix C. First, the proportion of judgments each voice quality received as compared with every other voice quality was determined for each of the five personality attributes and the one vocal attribute. These proportions were in turn translated into standard measures (Z scores) which represent scale separations of the various voice qualities with respect to each personality and vocal attribute and in terms of the standard deviation as the unit.

The results of the scaling procedure are presented in two forms:

- (1) a bar graph summarizing overall attributes, the relative amount of each attribute perceived in the four voice quality types; (Table 2) and
- (2) linear graphs for each of the personality and vocal attributes (Table 3).

For the purposes of this study, any discrepancy between the observed and the theoretical proportions of more than two times the standard error was to be considered evidence for the possible invalidity of the Case V assumption (equal discriminial dispersions). Two standard errors is a more conservative criterion of discrepancy between theoretical and obtained proportions than that of the four probable errors recommended by Guilford.

Guilford suggested that any discrepancy greater than four times the probable error (P.E. = .08) is too large to be ignored, and is indicative of a poor correspondence between theory and fact. The more conservative criterion of two standard errors (S.E. = .06) was used in assessing the validity of the results of the present scaling procedures. (4 P.E. = 2/3 S.E. in a normally distributed sample) These scale values obtained for the five personality attributes: masculinity, independence, happiness, warmth and complainingness and the one vocal attribute, pleasantness, were found on the whole to be valid according to the assumptions of Case V. (Table 1(a-f)) They deviated relatively insignificantly from the values expected if the Case V assumption is applied.

Although a survey of the literature supports a relationship between perceived nasality and personality attributes, the direction and intensity of this relationship appears not to have been subjected to experimental investigation. The results of this study, illustrated in Tables 2 and 3 indicate strong associations between various kinds of perceived nasality and selected personality attributes.

As one would predict from this definition of "normal voice":

The normal voice should possess certain minimal characteristics of pitch, loudness and quality, which make meaning clear, arouse the proper emotional response, and ensure a pleasant tonal effect upon the hearer. (Berry and Eisenson, 1956, p. 189)

normal voice quality rated highest on all positive attributes. The results of this study as presented in Tables 2 and 3 tend to correspond extremely well with the experiences of most voice clinicians. Normal voice quality was judged superior to all other vocal qualities on all desirable personality dimensions and the expectations of an association between nasal twang and

TABLE 1 (a)

COMPARISON OF OBSERVED AND THEORETICAL PROPORTIONS
WITH RESULTING DISCREPANCIES

MASCULINITY

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Observed Proportion	.50	.39	.28	.22
Theoretical Proportion	.50	.44	.30	.16
Discrepancies	.00	.04	.02	.06
HYPONASAL				
Observed Proportion	.61	.50	.44	.16
Theoretical Proportion	.56	.50	.36	.20
Discrepancies	.04	.00	*.08	.04
HYPERNASAL				
Observed Proportion	.72	.56	.50	.34
Theoretical Proportion	.70	.64	.50	.31
Discrepancies	.02	*.08	.00	.03
NASAL TWANG				
Observed Proportion	.78	.84	.66	.50
Theoretical Proportion	.84	.80	.69	.50
Discrepancies	.06	.04	.04	.00

* Indicates discrepancy greater than two standard errors in size (.06). The standard errors of the individual proportions ranged from .023 (for proportions of .89) to .037 (for proportions of .50).

TABLE 1 (b)

COMPARISON OF OBSERVED AND THEORETICAL PROPORTIONS
WITH RESULTING DISCREPANCIES

INDEPENDENCE

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Observed Proportion	.50	.34	.30	.44
Theoretical Proportion	.50	.39	.29	.41
Discrepancies	.00	.04	.01	.03
HYPONASAL				
Observed Proportion	.66	.50	.32	.54
Theoretical Proportion	.61	.50	.39	.53
Discrepancies	.04	.00	.07	.01
HYPERNASAL				
Observed Proportion	.70	.68	.50	.63
Theoretical Proportion	.71	.61	.50	.63
Discrepancies	.01	*.07	.00	.01
NASAL TWANG				
Observed Proportion	.56	.46	.37	.50
Theoretical Proportion	.59	.47	.37	.50
Discrepancies	.03	.01	.01	.00

* Indicates discrepancy greater than two standard errors in size (.06). The standard errors of the individual proportions ranged from .023 (for proportions of .89) to .037 (for proportions of .50).

TABLE 1 (c)

COMPARISON OF OBSERVED AND THEORETICAL PROPORTIONS
WITH RESULTING DISCREPANCIES

HAPPINESS

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Observed Proportion	.50	.41	.30	.27
Theoretical Proportion	.50	.42	.30	.28
Discrepancies	.00	.01	.00	.01
HYPONASAL				
Observed Proportion	.59	.50	.36	.35
Theoretical Proportion	.58	.50	.32	.29
Discrepancies	.01	.00	.03	.06
HYPERNASAL				
Observed Proportion	.70	.64	.50	.47
Theoretical Proportion	.70	.68	.50	.48
Discrepancies	.00	.03	.00	.01
NASAL TWANG				
Observed Proportion	.73	.65	.53	.50
Theoretical Proportion	.72	.71	.52	.50
Discrepancies	.01	.06	.01	.00

TABLE 1 (d)

COMPARISON OF OBSERVED AND THEORETICAL PROPORTIONS

WITH RESULTING DISCREPANCIES

PLEASANTNESS

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Observed Proportion	.50	.20	.25	.13
Theoretical Proportion	.50	.37	.27	.17
Discrepancies	.00	*.17	.02	*.43
HYPONASAL				
Observed Proportion	.80	.50	.46	.28
Theoretical Proportion	.63	.50	.40	.24
Discrepancies	*.17	.00	.06	.04
HYPERNASAL				
Observed Proportion	.75	.54	.50	.46
Theoretical Proportion	.73	.60	.50	.35
Discrepancies	.02	.06	.00	*.11
NASAL TWANG				
Observed Proportion	.87	.72	.54	.50
Theoretical Proportion	.83	.76	.65	.50
Discrepancies	.04	.04	*.11	.00

* Indicates discrepancy greater than two standard errors in size (.06). The standard errors of the individual proportions ranged from .023 (for proportions of .89) to .037 (for proportions of .50).

TABLE 1 (e)

COMPARISON OF OBSERVED AND THEORETICAL PROPORTIONS
WITH RESULTING DISCREPANCIES

WARMTH

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Observed Proportions	.50	.51	.49	.19
Theoretical Proportion	.50	.48	.48	.19
Discrepancies	.00	.03	.01	.01
HYPONASAL				
Observed Proportions	.49	.50	.49	.22
Theoretical Proportion	.52	.50	.49	.21
Discrepancies	.03	.00	.01	.01
HYPERNASAL				
Observed Proportions	.51	.51	.50	.21
Theoretical Proportion	.52	.51	.50	.21
Discrepancies	.01	.01	.00	.00
NASAL TWANG				
Observed Proportions	.81	.78	.79	.50
Theoretical Proportion	.81	.79	.79	.50
Discrepancies	.01	.01	.00	.00

TABLE 1 (f)

COMPARISON OF OBSERVED AND THEORETICAL PROPORTIONS
WITH RESULTING DISCREPANCIES

COMPLAININGNESS

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Observed Proportion	.50	.46	.51	.77
Theoretical Proportion	.50	.42	.45	.83
Discrepancies	.00	.05	.06	*.07
HYPONASAL				
Observed Proportion	.54	.50	.51	.89
Theoretical Proportion	.58	.50	.53	.87
Discrepancies	.05	.00	.02	.02
HYPERNASAL				
Observed Proportion	.49	.49	.50	.86
Theoretical Proportion	.55	.47	.50	.87
Discrepancies	.06	.02	.00	.00
NASAL TWANG				
Observed Proportion	.23	.11	.14	.50
Theoretical Proportion	.17	.13	.14	.50
Discrepancies	*.07	.02	.00	.00

* Indicates discrepancy greater than two standard errors in size (.06). The standard errors of the individual proportions ranged from .023 (for proportions of .89) to .037 (for proportions of .50).

noncomplainingness was supported. Such agreement of personal experiences with these experimental findings strengthens the tendency to view these results as valid. The method of paired comparisons used to generate these results was chosen as one of the more precise psychological scaling techniques; although, its practical application is limited to studies involving relatively few stimuli.

It can be said that the personality attribute "warmth" is a positive characteristic of each of the three vocal qualities: "normal", hypernasal, and hyponasal, and is perceived with approximately equal intensity in these three vocal qualities; but this attribute is not perceived as a characteristic personality attribute associated with the nasal twang voice quality.

The individual who is considered hypernasal, although his voice is perceived as revealing a pleasant quality and a warm relatively noncomplaining personality, is perceived as a dependent and unhappy person relative to the persons with either a normal or hyponasal voice. This vocal quality is also perceived as less masculine than either the normal or hyponasal voice.

The hyponasal voice quality is perceived as more pleasant and reflects a more independent personality relative to the hypernasal quality, and is correspondingly considered more happy. The individual with hyponasal voice quality also tends to be perceived as warm and relatively noncomplaining.

The most outstanding personality attribute associated with the nasal twang vocal quality was complainingness. The person with the nasal twang vocal quality was perceived as exhibiting an unpleasant vocal quality and

TABLE 2

SUMMARY OF SCALE VALUES FOR FOUR VOCAL QUALITIES

ACCORDING TO SIX ATTRIBUTE DIMENSIONS

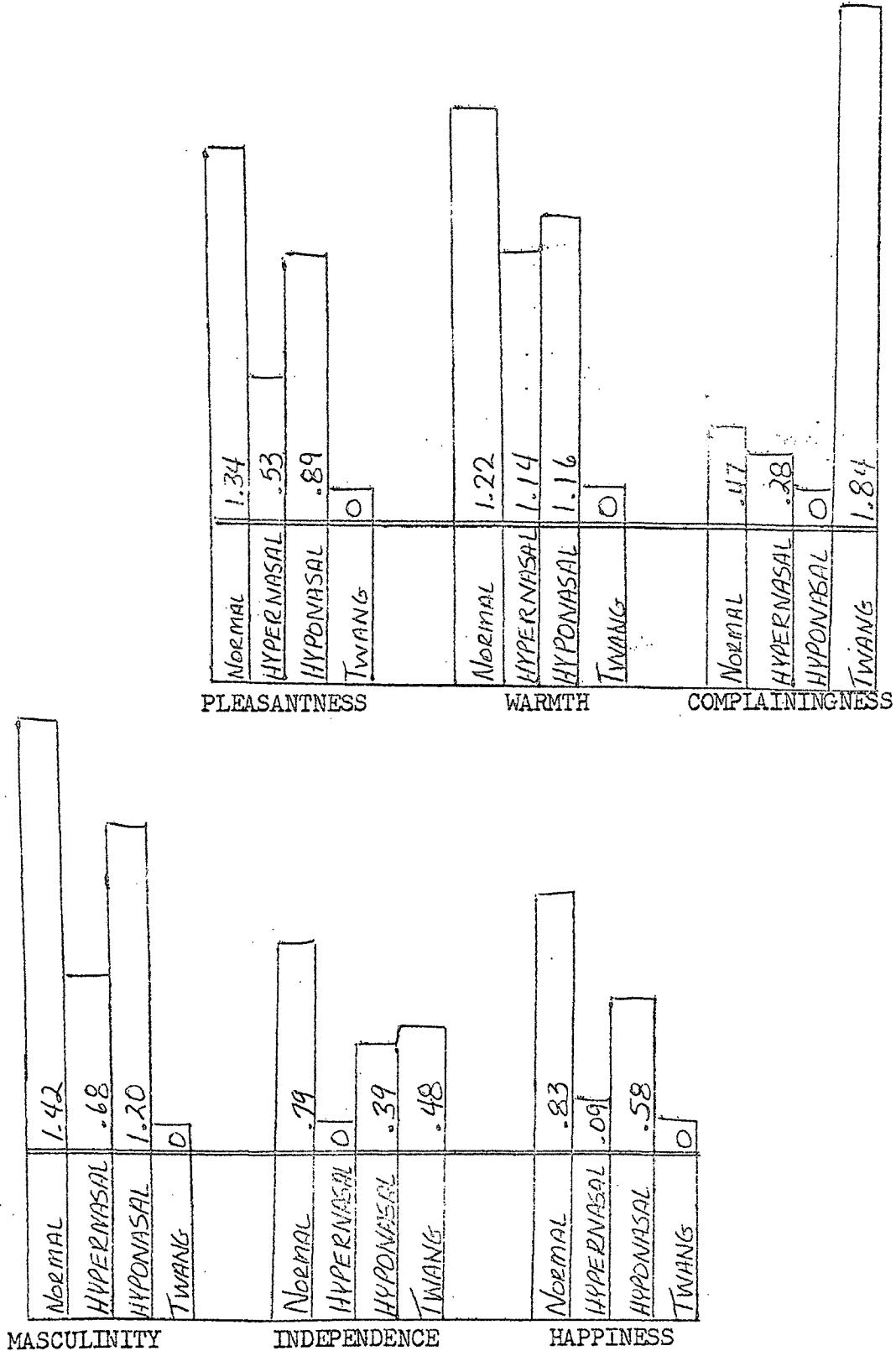


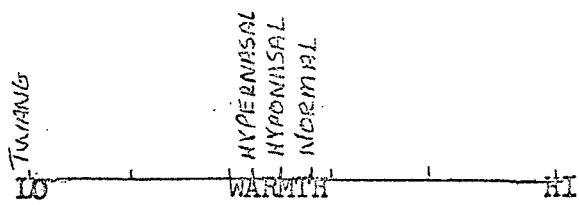
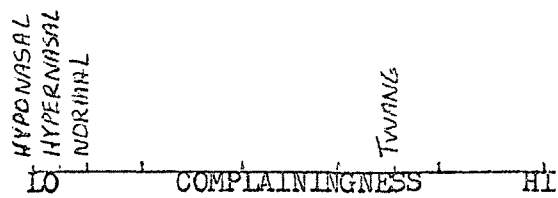
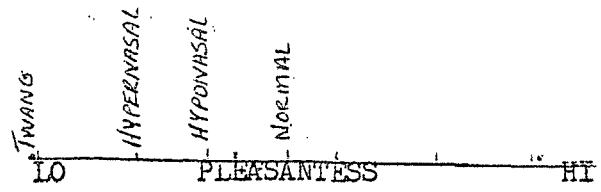
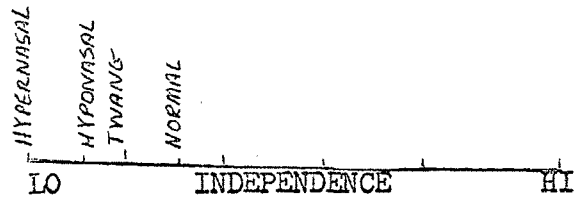
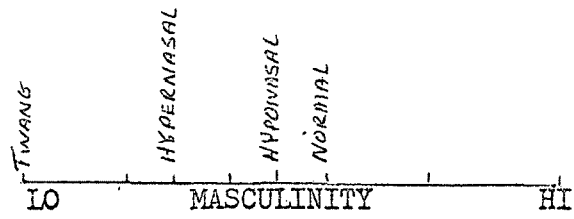
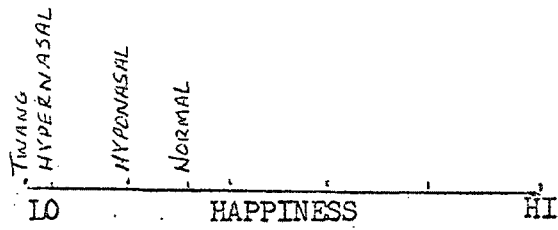
TABLE 3

LINEAR SCALE VALUES FOR FOUR VOCAL QUALITIES

ACCORDING TO

EACH OF FIVE PERSONALITY DIMENSIONS

AND ONE VOCAL ATTRIBUTE DIMENSION



a relatively complaining, cold unhappy personality; this quality was also perceived as being less masculine than normal, hypernasal or hyponasal vocal qualities. Although the nasal twang was perceived as the most unfavorable of the four vocal qualities, it rated quite high with respect to the attribute "independence". An individual exhibiting "nasal twang" was perceived as having an air of independence.

Review of the literature has revealed: (1) Nasality is often equated with the immature, demanding and childish aspects of the personality; (2) a decreased nasal resonance is often marked as giving the voice a "warmer feeling"; (3) nasality "in the absence of organic factors" is considered to be a characteristic expression of aggression; (4) the speaker with "nasal whine" or "twang" tends to be characterized as showing "emotional instability" and low dominance. This study tends to support some of these general observations and assumptions. The relevant findings are: (1) a hypernasal voice quality is often associated with a relatively dependent, unhappy personality; (2) a hyponasal voice does tend to reflect a warm and relatively noncomplaining personality as far as the listeners are concerned; (3) the speaker with the nasal twang quality is often perceived as a relatively complaining, cold, unhappy personality.

CHAPTER IV

DISCUSSION

The findings of this study can be used in several ways by the voice clinician to better serve the patient with a nasal voice quality problem. First, such information could serve as a motivating device for some patients. If the clinician is able to tell the patient how most people tend to react to his type of voice quality problem, he may be more motivated to change it through therapy than if he does not seem to see any personal gain by improving his voice. For example, a person who exhibits a very hypernasal voice quality may be more motivated to work for a less nasal vocal quality if he understands that listeners tend to make personality judgments from voice quality and that our investigations show that hypernasal quality tends to be heard as belonging to a dependent and unhappy person. The person who exhibits a nasal twang quality could similarly be informed that many people associate his type of voice with a person who is relatively complaining, cold and unhappy. Information of this type, properly used, could be a strong motivating force for the patient to seek a more acceptable voice quality.

Secondly, information of listener perceptions of various nasal voice qualities may aid and influence the clinician in selection of his therapy caseload. The clinician now has additional bases for justifying inclusion or exclusion of certain voice quality problems in his caseload. With this knowledge of listener personality judgments, the clinician can better determine which voice quality problem is more likely to pose a social and personal handicap. For example, if the present experimental results can be generalized, the nasal twang quality is generally perceived as having

more negative personality attributes than the hyponasal quality. Although both qualities may exist as voice problems, according to this study, nasal twang is perceived as the less desirable of the two. The clinician may therefore wish to deal with that voice problem which is perceptually tied to more undesirable personality attributes.

"The understanding of the psychological background of voice problems would be incomplete without an inclusion of the environment. Family, friends and associates react to the impaired voice of that patient, in turn, the patient reacts to their reactions. In vocal rehabilitation, this relationship can be a source of help as well as of resistance." (Brodnitz, 1968, pp. 45-46) If Brodnitz is correct in assigning such importance to environmental involvement, of which listener perception is an integral part, the voice therapist's role should be expanded from mere consideration of the speaker to consideration and involvement with important listeners. Johnson (1946) also emphasizes the importance of "re-education of the persons who are associated in important ways with the case". The voice therapist should counsel the important listeners (family, friends and associates) as to the nature of their reactions to the voice quality of the patient. From the information revealed in this study, the therapist can tell the family and other important listeners that many people react to certain perceived voice qualities in specific ways; that there is a tendency for people to form conclusions about a person's personality merely by listening to his voice. For example, if the patient in question exhibits a nasal twang voice, the therapist is in a position, using the results of this study, to explain the general tendency of many listeners to associate a perceived nasal twang with a complaining, unhappy, cold personality. As a consequence of

these perceptions, his important listeners may have a tendency to react to him as if he is actually cold, unhappy and a relatively complaining individual. In reality, these perceptions may be erroneous - the patient may not be a cold, unhappy, complaining individual, but the reactions of others to his voice do tend to affect the patient's perception of himself and, in turn, reinforce maintenance of the undesirable nasal quality. The important listeners in the patient's environment should be made aware of their possible tendency to judge the individual according to his voice. The listeners should be made aware of the fact that voice quality is not synonymous with personality, but by their reactions to the undesirable quality they perceive, the listeners may in fact be aiding in the retention of the undesirable quality. Appropriate counseling of influential listeners could alter the environment such that voice quality improvement can and does take place. Results of such an expanded role lead to a fourth consideration: the possible validity of the perceptions associated with the various kinds of voice qualities. For example, through actual interaction with the person who exhibits a hyponasal voice quality, the clinician should determine whether this person revealed, in fact, the personality attributes perceptually associated with hyponasal voice quality: a warm, relatively noncomplaining, yet dependent and unhappy personality.

If the voice therapist's evaluation reveals that the listener's perceptions are actually descriptive of the patient's personality, the personality problem must certainly receive attention. It may be as Brodnitz (1968) suggests, "that voice quality may be difficult or impossible to change in the absence of personality change". The voice therapist, utilizing the findings of this study and the findings of his own vocal

evaluation, is in a better position to make the necessary and appropriate referrals more accurately to agencies equipped to deal specifically with personality problems than is the therapist who deals only with the esthetic aspect of the voice problem.

Further research is necessary into the relationships between perceived voice quality and personality attributes associated with the quality. If, in fact, the patient's personality is correctly perceived from voice quality cues, one would wonder what possible causal relationships might exist between these two broad dimensions of behavior. This question is currently open to speculation and it is beyond the scope of this study to consider the possible answer, though certainly the answers need to be sought in future studies.

It would be interesting to subject to experimental investigation the observations of authorities in the field who, like Van Riper (1958), believe that "... standards of vocal adequacy do vary with cultural and economic status". According to these observations, cultural norms and acceptance of the degrees of nasality would appear to influence listener perceptions. Review of the literature has indicated that too much nasality as well as too little nasality is not good. Therefore, varying degrees of nasality (hypernasality, hyponasality and nasal twang) are critical factors in the consideration of listener judgments of nasal resonance.

Johnson (1951) indicated that certain dialectical differences with respect to the amount of nasality occur in this country. The listener judgments for this study were obtained from a college population in western Montana. It may be that Western listeners perceive varying degrees of

nasality differently from Midwestern, Southern or Eastern listeners. Therefore, it would seem appropriate and relevant to replicate the present study using listeners from other geographical areas of the country to determine the extent to which different cultural norms do affect the directionality and intensity of the relationship between degrees of perceived nasality and particular personality attributes.

CHAPTER V

SUMMARY

Judgments of the relationship between various voice qualities and personality attributes have been made for years without systematic, scientific investigation of the reliability of these assumptions. The present study was designed to investigate systematically the relationship between voice quality and perceived personality.

Sixty college students listened to 132 pairs of 10-second speech samples prepared from a standard passage and exhibiting normal vocal quality or one of three types of nasality. The listeners were instructed to indicate which one of each pair of speech samples exhibited more of a particular personality or vocal attribute. Six attributes were considered: happiness, masculinity, warmth, independence, pleasantness, and complainingness.

The subjects used for preparation of the speech samples were three adult males with "normal" speaking voices. Four types of voice quality were elicited from each of the three subjects: "normal", hypernasal, hyponasal, and "nasal twang". The "normal" voice quality was obtained from each of the "normal" speaking subjects prior to experimental modification of their speech mechanism; the hypernasal voice quality was experimentally produced through the creation of inadequate velopharyngeal closure by holding the soft palate down with rubber tubing inserted through the nares; the hyponasal voice quality was obtained by filling the nasopharynx with an inflated bulb. For the "nasal twang" quality, the subjects imitated the quality demonstrated by a speaker experienced in the production of a perceived nasal twang.

Ten-second samples, each exhibiting one of the four vocal qualities, were extracted from the readings of a standard passage. The ten-second samples were paired so that each speaker and each quality were paired twice, a total of 132 experimental pairs. The experimental pairs were played to the sixty listeners who judged which member of each pair exhibited most of a particular personality attribute. Thurstone's Law of Comparative Judgments, Case V, which utilizes the assumption that all discriminial dispersions are equal was used to generate scale values on the various personality dimensions for all of the voice qualities.

On the basis of the findings of this study, it can be said that listeners associate particular personality attributes with various nasal voice qualities, and the intensity of these perceptions varies according to the kind of nasality perceived. The "normal" voice quality was perceived as the most desirable vocal quality, associated with the greatest amount of all positive vocal and personality attributes and the least amount of the negative personality attribute, complainingness. The hypernasal voice quality was considered pleasant and revealed a personality perceived as warm, relatively noncomplaining; yet, dependent, unhappy and revealing less masculinity than the "normal" or hyponasal voice. The hyponasal voice quality was warm, relatively noncomplaining, and happier than the hypernasal quality. The hyponasal voice reflects a more independent personality relative to the hypernasal quality in the judgment of the listeners in this study. Nasal twang was found to be the least desirable of the four vocal qualities. An individual exhibiting this quality was perceived as a relatively complaining, cold, unhappy personality; although he was perceived as having an air of independence.

The practical application of the findings were discussed; these findings can be applied to patient motivation, case selection and counseling of the important listeners to the person with a nasal voice quality problem.

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APPENDICES

APPENDIX A

Experimental Speech Sample
and
Instructions to the Listeners

APPENDIX A

Experimental Speech Sample

"Our nation's psychologists emphasize the necessity of our children's deviations from "

Instructions to the Listeners

People often form impressions of persons they have never personally met solely on the basis of the sound of their voices. You have probably done this yourself from time to time in talking to strangers on the telephone, or meeting people for the first time. It is common for people talking to strangers to form impressions about that person on the basis of the sound of his voice. That is what we want you to do now - make judgments about people on the basis of what their voice sounds like to you. What kind of personality attributes do you detect in the voices of others?

You will hear pairs of short samples of adult speech. After you hear each pair, judge which member of the pair has the greater amount of the designated attribute. You will be given rating sheets like the one I will now show you which indicate the attribute you are to rate. Before each pair, its number will be heard on the tape recording. You are to find that number on your score sheet. Listen to the two speech samples and determine which member of the sample sounds like it has the greater amount of that attribute. Mark an "X" in the blank corresponding to the appropriate member. (A corresponds to the first member of the pair, and B corresponds to the second member of that pair) Five practice samples will be given first; if there are no questions after you have rated the practice samples, we will proceed with the experimental samples. At no time will you be allowed to ask further questions.

APPENDIX B

Listener Rating Sheet

LISTENER RATING SHEET

Practice Samples (Which voice sounds more independent, A or B?)

	<u>A</u>	<u>B</u>		<u>A</u>	<u>B</u>		<u>A</u>	<u>B</u>
1.	_____	_____	3.	_____	_____	5.	_____	_____
2.	_____	_____	4.	_____	_____			
1.	_____	_____	45.	_____	_____	89.	_____	_____
2.	_____	_____	46.	_____	_____	90.	_____	_____
3.	_____	_____	47.	_____	_____	91.	_____	_____
4.	_____	_____	48.	_____	_____	92.	_____	_____
5.	_____	_____	49.	_____	_____	93.	_____	_____
6.	_____	_____	50.	_____	_____	94.	_____	_____
7.	_____	_____	51.	_____	_____	95.	_____	_____
8.	_____	_____	52.	_____	_____	96.	_____	_____
9.	_____	_____	53.	_____	_____	97.	_____	_____
10.	_____	_____	54.	_____	_____	98.	_____	_____
11.	_____	_____	55.	_____	_____	99.	_____	_____
12.	_____	_____	56.	_____	_____	100.	_____	_____
13.	_____	_____	57.	_____	_____	101.	_____	_____
14.	_____	_____	58.	_____	_____	102.	_____	_____
15.	_____	_____	59.	_____	_____	103.	_____	_____
16.	_____	_____	60.	_____	_____	104.	_____	_____
17.	_____	_____	61.	_____	_____	105.	_____	_____
18.	_____	_____	62.	_____	_____	106.	_____	_____
19.	_____	_____	63.	_____	_____	107.	_____	_____
20.	_____	_____	64.	_____	_____	108.	_____	_____
21.	_____	_____	65.	_____	_____	109.	_____	_____
22.	_____	_____	66.	_____	_____	110.	_____	_____
23.	_____	_____	67.	_____	_____	111.	_____	_____
24.	_____	_____	68.	_____	_____	112.	_____	_____
25.	_____	_____	69.	_____	_____	113.	_____	_____
26.	_____	_____	70.	_____	_____	114.	_____	_____
27.	_____	_____	71.	_____	_____	115.	_____	_____
28.	_____	_____	72.	_____	_____	116.	_____	_____
29.	_____	_____	73.	_____	_____	117.	_____	_____
30.	_____	_____	74.	_____	_____	118.	_____	_____
31.	_____	_____	75.	_____	_____	119.	_____	_____
32.	_____	_____	76.	_____	_____	120.	_____	_____
33.	_____	_____	77.	_____	_____	121.	_____	_____
34.	_____	_____	78.	_____	_____	122.	_____	_____
35.	_____	_____	79.	_____	_____	123.	_____	_____
36.	_____	_____	80.	_____	_____	124.	_____	_____
37.	_____	_____	81.	_____	_____	125.	_____	_____
38.	_____	_____	82.	_____	_____	126.	_____	_____
39.	_____	_____	83.	_____	_____	127.	_____	_____
40.	_____	_____	84.	_____	_____	128.	_____	_____
41.	_____	_____	85.	_____	_____	129.	_____	_____
42.	_____	_____	86.	_____	_____	130.	_____	_____
43.	_____	_____	87.	_____	_____	131.	_____	_____
44.	_____	_____	88.	_____	_____	132.	_____	_____

APPENDIX C

A Resume Of

Raw data and proportion of the times that a voice quality given at the top of the column was preferred to those at the left; and scale separations in terms of standard distributions of the differences between each pair of voice qualities.

APPENDIX C (1)

HAPPINESS

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Raw Data	.00	74-106	54-126	49-131
Observed Proportions	.50	.41	.30	.27
Standard Score	.00	-.23	-.52	-.61
HYPONASAL				
Raw Data	106-74	-	64-116	63-117
Observed Proportions	.59	.50	.36	.35
Standard Score	.23	.00	-.37	-.39
HYPERNASAL				
Raw Data	126-54	116-64	-	84-96
Observed Proportions	.70	.64	.50	.47
Standard Score	.52	.37	.00	-.08
NASAL TWANG				
Raw Data	131-49	117-63	84-96	-
Observed Proportions	.73	.65	.53	.50
Standard Score	.61	.39	.08	.00

APPENDIX C (2)

MASCULINITY

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Raw Data	-	71-109	50-130	39-141
Observed Proportions	.50	.39	.28	.22
Standard Score	.00	-.27	-.59	-.78
HYPONASAL				
Raw Data	109-71	-	79-101	28-152
Observed Proportions	.61	.50	.44	.16
Standard Score	.27	.00	-.15	-1.01
HYPERNASAL				
Raw Data	130-50	101-79	-	62-118
Observed Proportions	.72	.56	.50	.34
Standard Score	.59	.15	.00	-.40
NASAL TWANG				
Raw Data	141-39	152-28	118-62	-
Observed Proportions	.78	.84	.66	.50
Standard Score	.78	1.01	.40	.00

APPENDIX C (3)

INDEPENDENCE

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Raw Data	-	79-101	62-118	54-126
Observed Proportions	.50	.44	.34	.30
Standard Score	.00	-.15	-.40	-.52
HYPONASAL				
Raw Data	118-62	97-83	-	57-123
Observed Proportions	.66	.54	.50	.32
Standard Score	.40	.10	.00	-.48
HYPERNASAL				
Raw Data	126-54	113-67	123-57	-
Observed Proportions	.70	.63	.68	.50
Standard Score	.52	.33	.48	.00
NASAL TWANG				
Raw Data	101-79	-	83-97	67-113
Observed Proportions	.56	.50	.46	.37
Standard Score	.15	.00	.10	-.33

APPENDIX C (4)

PLEASANTNESS

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Raw Data	-	36-144	45-135	23-157
Observed Proportions	.50	.20	.25	.13
Standard Score	.00	-.84	-.68	-1.14
HYPONASAL				
Raw Data	144-36	-	83-97	50-130
Observed Proportions	.80	.50	.46	.28
Standard Score	.84	.00	-.10	-.59
HYPERNASAL				
Raw Data	135-45	97-83	-	83-97
Observed Proportions	.75	.54	.50	.46
Standard Score	.68	.10	.00	-.10
NASAL TWANG				
Raw Data	157-23	130-50	97-83	-
Observed Proportions	.87	.72	.54	.50
Standard Score	1.14	.59	.10	.00

APPENDIX C (5)

COMPLAININGNESS

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Raw Data	138-42	-	92-88	83-97
Observed Proportions	.77	.50	.51	.46
Standard Score	.73	.00	.03	-.10
HYPONASAL				
Raw Data	160-20	97-83	92-88	-
Observed Proportions	.89	.54	.51	.50
Standard Score	1.22	.10	.03	.00
HYPERNASAL				
Raw Data	155-25	88-92	-	88-92
Observed Proportions	.87	.49	.50	.49
Standard Score	1.09	-.03	.00	.03
NASAL TWANG				
Raw Data	-	42-138	25-155	20-160
Observed Proportions	.50	.23	.14	.11
Standard Score	.00	-.73	-1.09	-1.22

APPENDIX C (6)

WARMTH

	NORMAL	HYPONASAL	HYPERNASAL	NASAL TWANG
NORMAL				
Raw Data	-	92-88	88-92	34-146
Observed Proportions	.50	.51	.49	.79
Standard Score	.00	.03	-.03	-.88
HYPONASAL				
Raw Data	88-92	-	88-92	39-141
Observed Proportions	.49	.50	.49	.22
Standard Score	-.13	.00	-.03	-.78
HYPERNASAL				
Raw Data	92-88	92-88	-	38-142
Observed Proportions	.51	.51	.50	.21
Standard Score	.03	.03	.00	-.80
NASAL TWANG				
Raw Data	146-34	141-39	142-38	-
Observed Proportions	.81	.78	.79	.50
Standard Score	.82	.78	.80	.00