A Study Of Relationships Between Judgments of Speech and Appearance of Patients With Orofacial Clefts

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A series of six studies was designed to examine the effects of subjects' appearance on listeners' judgments of nasal speech and to examine the effects of nasal speech on viewers' judgments of attractiveness. In three studies, pictures of male and female subjects with varying degrees of orofacial clefts were paired with tape-recorded speech samples with varying degrees of nasality, and judges rated speech acceptability. Results of two-way analysis of variance failed to support the idea that appearance has an effect on ratings of nasality. In three other studies, the same stimuli were used to examine the effects of nasal speech on judges' ratings of appearance. Results of a two-way analysis of variance indicated that nasality had an effect on ratings of *appearance*. As the severity of nasality increased, ratings of *attractiveness* decreased. Results imply that a decrease in nasality may enhance the way persons with cleft lips are perceived cosmetically.

Cosmetic appearance and speech are considered to be powerful factors in determining interpersonal attitudes and behaviors. Formal studies have shown appearance to be related to judgments of intelligence (Barocas and Karoly, 1972; Richmond, 1978), social skills (Goldman and Lewis, 1977), career accomplishments (Dion et al., 1972), credibility (Widgery, 1974) and likelihood of being guilty of a crime (Efran, 1974; Singleton and Hofacre. 1976). Similar studies of the effects of speech are fewer in number. However, speech characteristics have been found to be related to judgments of intelligence (Hodo, et al., 1973; Cavior and Dokecki, 1973), social class status (Frender et al., 1970), and social acceptability (Perrin, 1954; Freeman and Sonnega, 1956; Kennedy, 1965; Marge, 1966). Unfortunately, few studies have included subjects with facial anomalies such as those associated with orofacial clefting, and few have been concerned with the combined effects of cosmetic appearance and speech.

In one group of studies (Barocas and Karoly, 1972; Martin, 1965; Williams, et al., 1963; Falk and McGlone, 1976; Sinko, 1977), judgments of speech were made in the presence and absence of visual stimuli and were found to differ. Podol and Salvia (1975) manipulated speech and visual stimuli and found that visual stigmata associated with orofacial clefts affected listeners' ratings of nasality. No studies have investigated the effects of speech characteristics on ratings of appearance.

Purpose

This study was designed to respond to two questions: (1) What are the effects of subjects' appearance on listeners' judgments of nasality? (2) What are the effects of nasality on viewers' judgments of attractiveness?

Methods

Six studies were carried out in response to the questions posed. In all studies, judges sat in a room and listened to tape recordings while viewing pictures. In studies one, three and five, judges rated recorded speech. In

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studies two, four, and six they rated appearance.

Visual Stimuli: Color prints and slides of adult white males and females were used as visual stimuli. Initially, 50 were selected from clinic files by the investigators to represent a range of attractiveness. Both a frontal and a profile picture were available for each of the subjects selected. Next, a panel of six adult white males and six adult white females viewed the frontal and profile pictures of each subject and rated each subject on a sevenpoint scale with one labeled very attractive and seven very unattractive. Means of ratings obtained from this panel were used to assign subjects to appearance categories. Subjects with mean ratings of one to 1.5 were placed in a category labeled normal appearance, and those with mean ratings between two and three were placed in a mildly unattractive category. Those with mean ratings between four and five were categorized as being moderately unattractive, and those with means between six and seven were considered to be severely unattractive.

Pictures of one male and one female from each of the categories—normal, mildly unattractive, and moderately unattractive—were used in studies one and two. Pictures of another male and another female from each of the categories were used in studies three and four. In studies five and six, a new male and a new female from each of the four appearance categories were selected and used.

In studies one and two, five-by-seven-inch color prints were used as visual stimuli. At that point, data available from another study (Glass, 1978) indicated that comparable results could be obtained from slides, projected to provide 14-by-20-inch pictures. Because slides were more readily available, they were used in studies three through six.

Auditory Stimuli: Two-minute tape recordings of adult patients reading a standard paragraph were selected from clinic files and used as auditory stimuli. As a part of clinic procedures, groups of three to six speech clinicians categorize all patients' recordings as demonstrating normal, mild, moderate, or severe nasal resonance. In addition, they rate articulation adequacy and identify other speech deviations. All of the recordings used in these six studies were categorized by the clinic clinician groups as showing normal or deviant nasal resonance and were judged to be free from articulation errors or other speech deviations.

Sets of male and female recordings representing normal, mild and, moderate nasality were used in studies one and two. Different sets representing normal, mild, moderate, and severe nasality were used in studies three and four, and different sets representing the same four categories were used in studies five and six.

Judges: Adult white males and females were used as judges in all six studies. They were recruited from persons known to the investigators and were judged to be of upper middle-class socioeconomic status. They were unsophisticated in that they had had no formal training related to the evaluation of speech and appearance and did not know any of the subjects used in the studies. Twelve male and 12 female judges were used in study one. Twelve other males and 12 other females were used in study two. Sixteen additional males and 16 additional females were used in study three. Sixteen males and 16 females, not previously participating as judges, were used in study four. Studies five and six used the same number of new females and males as studies three and four. A total of 176 different adult judges took part in the study.

Rating Scales: Seven-point, equal-appearing-interval scales were used in all studies. In studies one, three, and five, number one on the scale was labeled normal and seven superior. Judges were told to use this scale to rate the acceptability of subjects' speech. No further attempt was made to define speech or the points on the scale. In studies two, four, and six, one on the scale was labeled very attractive and seven very unattractive. Judges were told to use this scale to rate subjects' appearance. Again, no attempts were made to define appearance or points on the scale.

Procedures: In all six studies, subjects sat in a quiet room with one investigator. A frontal and profile picture of a subject was placed in a holder or was projected on a wall at eye level. Speech recordings were presented through a remote speaker placed directly under the pictures and attached to a high quality tape recorder. Judges were given directions, and each pair of pictures and the appropriate recording were presented, one subject at a time. In studies one, three, and five, judges rated speech. In studies two, four, and six they rated attractiveness.

In study one, 24 judges were divided into three groups, with four males and four females in each group. Each group rated three male picture-recording pairs and three female picture-recording pairs. The nine male picturerecording pairs included all possible pairing combinations. The same was true for the nine female picture-recording pairs. The use of three groups of judges provided a design in which no judge saw the same picture or heard the same recording twice. The combinations of pairs presented to each group of judges is shown in Table 1. These pairs were presented to subjects in random order.

In study two, the 24 new judges were grouped in the same manner as in study one, and the stimuli were organized and presented in the same way. The only difference was that subjects were instructed to rate appearance.

In study three, new pictures and new recordings were used. In addition, severely nasal speech recordings and extremely unattractive pictures were added to the three speech and picture categories used in studies one and two. This provided 16 possible combinations of pictures and recordings for males and for females. The 32 judges who participated in this study were divided into 16 groups of two, with one male and one female in each group. Each group was asked to rate the speech of one male and one female picture-recording pair. Again, groups of judges did not rate the same recordings or see the same picture more than once.

The same stimuli and procedures used in study three were used in study four, except that the new groups of judges were asked to rate appearance. Studies five and six were exact replications of three and four, except that new sets of stimuli and new judges were used.

Results

Data on the effects of visual stimuli on ratings of speech acceptability are presented in Figure 1. Data on males and females are presented separately because previous studies have shown that appearance may affect psychosocial judgments differently for each sex (Berscheid et al., 1971; Widgery, 1974). Visual inspection of data for males suggests a slight trend for speech to decrease in acceptability when it is paired with increasingly less attractive pictures. In all three studies, the speech of males was judged to be progressively less acceptable when paired with normal, moderately unattractive, and severely unattractive pictures. Ratings made in the presence of mildly unattractive pictures are responsible for the only inconsistencies in this trend. Data on females (Figure 1), indicate a similar but less pronounced trend. Again, the mildly unattractive picture accounts for the only deviation from the trend.

A two-way analysis of variance (ANOVA) was computed to test the statistical significance of the six distributions. The trend was found to be significant (F-11.95, p- .01) for only one distribution, males in study five. These findings are interpreted as failing to support the hypothesis that appearance affects judgments of the acceptability of nasal speech.

Data on the effects of nasal speech on ratings of appearance are presented in Figure 2. Visual inspection indicates a consistent trend for male pictures to be rated as being less attractive when they are paired with progressively more severe degrees of nasality. The same trend occurs for females, with one exception. In study two, attractiveness ratings did not differ under mild and moderate nasality pairings.

Analyses of variance were computed for

TABLE 1. Combinations of Auditory Stimuli (ie. Speech Recordings) and Visual Stimuli (ie. Pictures) for Males (M) and Females (F) as Rated by Three Groups of Eight Judges

M1 & F1 = Normal Attractive Pictures M2 & F2 = Mildly Unattractive Pictures			Ma & Fa = Normal Speech Recordings Mb & Fb = Mildly Nasal Speech Recordings			
	Picture-Recording	Pairs Rated By E	Each Group of Jud	ges		
GROUP 1	M2-Ma	M3-Mb	M1-Mc	F1-Fa	F2-Fb	F3-Fc
GROUP 2	M3-Ma	M1-Mb	M2-Mc	F2-Fa	F3-Fb	F1-Fc
GROUP 3	M1-Ma	M2-Mb	M3-Mc	F3-Fa	F1-Fb	F2-Fc



MEANS OF SPEECH RATINGS FOR STUDIES

FIGURE 1. Means of speech ratings obtained in studies one, three, and five.

MEANS OF ATTRACTIVENESS RATINGS FOR STUDIES TWO (●), FOUR (○), and Six (□)



FIGURE 2. Means of attractiveness ratings obtained in studies two, four, and six.

these six distributions, and the observed trends were found to be significant for males in studies two (f-1. 6.66., df-2, p- .01) and six (f-21.41, df-3, p- .01) and for females in studies four (F-21.9, df-3, p- .01) and six (F-17.2, df-3, p- .01). These findings are interpreted as supporting the hypothesis that nasal speech affects judgments of appearance.

Discussion

Within the limitations of this study, data obtained fail to provide strong evidence that appearance affects judgments of nasality. These findings do not agree with those of Podol and Salvia (1976), who found that stigmata associated with clefting affected judgments of nasality in their subjects. The different findings may be accounted for by differences in the severity of subjects' appearance, what judges were asked to rate, the information given judges, or the sophistication of the judges in making speech evaluations.

Data obtained in this study do provide evidence that the presence of nasality in speech affects judgments of the speakers' appearance. We are unaware of other studies that support or contradict these findings.

Explanations for the failure to find that appearance affects judgments of speech but that speech appears to affect appearance may be found in artifacts within the studies. One of these might be the limited range of variability in the stimuli used. Although the selection process was designed to produce stimuli that represented a five-to-six-interval range, the interval range for mean ratings obtained in the studies were only 1.9 for nasality and 3.0 for attractiveness. The influence of appearance may not be strong enough to be revealed with these limitations, using rating scales as measurement tools.

Also, it is possible that judges using these scales were not sufficiently reliable to produce stable measurements. However, previous studies by the investigators (Glass, 1978; Dawson et al., 1979) have provided data suggesting that the reliability of adults using the scales is fairly good. In the present studies, the design of all but studies one and two precluded obtaining reliability data. An analysis of variance did provide reliability estimates of .81, .85, and .86 for the three groups of eight judges who rated speech in study one and estimates of .79, .81, and .87 for the three groups of eight who rated attractiveness in study two. These estimates appear to be sufficiently high to encourage acceptance of the findings.

Another possibility is that the speech stimuli provided a closer approximation than the picture stimuli to the real life circumstances in which attitudes and reactions are learned. If this were true, the pictures may not have elicited responses during speech rating tasks, but recordings may have triggered responses while appearance ratings were being made.

If the findings of these studies are valid, one explanation might be that listeners' concepts of nasality are better established than viewers' concepts of attractiveness and are, therefore, less subject to influence by visual distractions. Another explanation might be that judges are better able to attend to auditory stimuli than to visual stimuli when distractions are present.

Regardless of the reasons for their existence, the findings of these studies do suggest that those responsible for the habilitation of patients with clefts should consider speech characteristics when evaluating appearance. They also suggest the possibility that modification of speech may serve to improve subjective evaluations of the patient's appearance. Finally, it appears evident that the interests of patients with clefts will be served better when we have a more complete understanding of the many variables that affect others' attitudes and behavior toward them.

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