

WHAT SOUNDS BEAUTIFUL IS GOOD: THE VOCAL ATTRACTIVENESS STEREOTYPE

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ABSTRACT: Two studies examined the effects of attractiveness of voice and physical appearance on impressions of personality. Subject-senders were videotaped as they read a standard-content text (Study 1) or randomly selected texts (Study 2). Judges rated the senders' vocal attractiveness from the auditory portion of the tape and their physical attractiveness from the visual portion of the tape. Other judges rated the senders' personality on the basis of their voice, face, or face plus voice. Senders with more attractive voices were rated more favorably in both the voice and face plus voice conditions; senders with more attractive faces were rated more favorably in both the face and face plus voice conditions. The effects of both vocal and physical attractiveness were more pronounced in the single channels (voice condition and face condition, respectively) than in the multiple channel (face plus voice condition). Possible antecedents and consequences of the vocal attractiveness stereotype are discussed.

Her voice was ever soft, gentle, and low, an excellent thing in woman.
Shakespeare (King Lear, Act V, Sc. 3)

Starting with Dion, Berscheid, and Walster's (1972) work on the "What is beautiful is good" phenomenon, numerous studies have shown that more attractive people are credited with more socially desirable personality traits (cf. Berscheid & Walster, 1974; Hatfield & Sprecher, 1986;

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Sorell & Nowack, 1981). Additional studies showed that more attractive people actually develop more favorable self-images and manifest more confident behavior patterns (cf. Adams, 1977; Snyder, Tanke, & Berscheid, 1977). The physical attractiveness stereotype represents the influence of the visual portion of appearance. It is proposed that attractiveness of a person's voice has similar effects. The rationale for a vocal attractiveness stereotype is presented below.

There is a large literature showing that both voice cues (e.g., pitch, intensity, etc.) and speech cues (e.g., non-fluencies, speech rate, etc.) are rich sources of interpersonal impressions. Several key findings seem particularly relevant to the present study. First, observers tend to agree on a variety of judgments about vocal cues: they agree on personality traits inferred from the voice (e.g., Allport & Cantril, 1934; Addington, 1968; Scherer, 1972; for reviews see Kramer, 1964; Scherer, 1979, 1986); they agree on emotions inferred from the voice (e.g., Scherer, 1974a; Scherer & Oshinsky, 1977); and they also agree on the acoustic characteristics associated with various voices (Scherer, 1974b). Determinants of voice-based impressions were also a frequent topic of investigation. Researchers examined correlations between observers' impressions and various parameters of the voice (e.g., Aronovitch, 1976), or they examined observers' impressions as a function of systematic variations in the voice (e.g., Addington, 1968). This latter technique was particularly popular in studies of speakers' credibility, with credibility operationalized as ratings of competence and dominance on one hand and likability and benevolence on the other hand. The results tend to show that faster speech rate (e.g., Smith, Brown, Strong, & Rencher, 1975), relative lack of non-fluencies such as pauses and repetitions (e.g., Miller & Hewgill, 1964; Sereno & Hawkins, 1967), and dynamic delivery (e.g., Pearce & Conklin, 1971) produced higher ratings on competence and dominance; effects on likability and benevolence were weaker and less consistent.

To the extent that people agree on various judgments about the voice, they are likely to agree on judgments of vocal attractiveness; to the extent that impressions vary as a function of vocal characteristics, they are likely to vary as a function of vocal attractiveness. Both issues were examined in the present study.

One may argue that any effects of vocal attractiveness will be dominated by those of physical attractiveness. However, research on the "de-meanor effect"—observers' tendency to form stable impressions of a sender regardless of the message that he or she sends—indicated that such impressions were formed by observers exposed only to facial expressions and, equally so, by observers exposed only to vocal cues (Zuckerman,

DeFrank, Hall, Larrance, & Rosenthal, 1979; Zuckerman, Larrance, Hall, DeFrank, & Rosenthal, 1979). Furthermore, several recent studies have shown that the overall effects of face and voice on perceivers' responses were equal (Ekman, Friesen, O'Sullivan, & Scherer, 1980; Krauss, Apple, Morency, Wenzel, & Winton, 1981; Zuckerman, Amidon, Bishop, & Pomerantz, 1982). More important, however, the conclusions of all relevant studies are that the relative influence of the face and voice depends on various moderators, including the type of judgment that is made and the situational context of the judgment.

What type of judgments will be affected by vocal attractiveness? A consistent finding of studies investigating the relative influence of vocal and facial cues was that the voice exerted greater influence on judgments of dominance whereas the face exerted greater influence on judgments of liking (DePaulo, Rosenthal, Eisenstat, Rogers, & Finkelstein, 1978; Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979; Zuckerman et al., 1982). We also mentioned earlier that variations in speech and voice cues seem to exert more influence on judgments of dominance than on judgments of likability. Finally, it is interesting to note that research on leadership in small groups has shown that power is defined by various aspects of vocal displays—speaking time primarily but also some stylistic features of the way one speaks (Bales, 1970; Bass, 1960; McGrath & Julian, 1963; Stein, 1975; Stein, Geis, & Damarin, 1973). It might be anticipated, therefore, that the effects of vocal attractiveness will be more pronounced for judgments of dominance.

Preliminary studies of the vocal attractiveness stereotype were conducted by Larrance and Zuckerman (1981) and Driver (1987). Larrance and Zuckerman showed that judges were able to agree on senders' "vocal likability" (effective interjudge reliability = .77) and that this variable was related to accuracy of sending vocal messages. However, since the concept of vocal likability may not be identical to that of vocal attractiveness, Larrance and Zuckerman concluded that "the existence of . . . a (vocal) stereotype and its potential effects await further research" (1981, p. 351).

Driver (1987) had judges rate the vocal and physical attractiveness of 200 senders (effective interjudge reliabilities were .86 and .88, respectively). Fifty-six senders, those with the highest and lowest vocal and physical attractiveness scores, were each rated on several trait adjectives on the basis of their voice, face, or face plus voice. Results showed that higher vocal attractiveness was related to more favorable ratings in the voice and face plus voice conditions; higher physical attractiveness was related to more favorable ratings in the face and face plus voice condition. Effects of both vocal and physical attractiveness were more pronounced when

judges were exposed to a single channel (voice condition and face condition, respectively) than to a multiple channel (face plus voice condition).

Several limitations of the Driver (1987) study should be noted. First, the senders in the study read a standard-content speech—the opening statement of an interested applicant in a job interview; people may pay more attention to the voice in a job interview than in other situations. Second, the judges of identical speeches may have stopped paying attention to their content and, therefore, become more sensitive to their vocal characteristics. Third, the use of senders with extreme attractiveness scores does not allow a test of curvilinear effects. A replication and extension of the Driver (1987) investigation would put most of the above reservations to rest, as well as demonstrate the robustness of the vocal attractiveness stereotype.

Method

Overview

Two studies were conducted. In Study 1, Driver's (1987) 200 senders, each videotaped while reading a standard-content text, served as targets. In Study 2, an additional group of 200 senders, each videotaped while reading a randomly selected text, served as targets. In both studies, several groups of judges rated the senders on a 10-adjective list on the basis of their voice, face, or face plus voice. In Study 1 these ratings were related to the vocal and physical attractiveness scores available from Driver's study. In Study 2, additional groups of judges rated the senders' vocal and physical attractiveness as well as the "vocal attractiveness" of the content of the transcripts. This transcript attractiveness measure was a safeguard, allowing a statistical control over possible effects of the content of the randomly selected texts. In both studies, judges' ratings of senders' personality were examined as a function of senders' vocal and physical attractiveness scores.

Subjects

There were three categories of subjects: (a) senders participating in the videotaping task (100 males and 100 females in Study 1, 101 males and 99 females in Study 2); (b) judges of vocal and physical attractiveness (5 male and 5 female judges in Study 1, 7 male and 7 female judges in Study 2) and judges of transcript attractiveness (9 females and 7 males in Study

2); and (c) judges of personality attributes (199 males and 199 females altogether). Both senders and judges were told that the goal of the research was to investigate how people form impressions about others. All subjects were college undergraduates. Those performing the attractiveness rating task in Study 1 were paid for their efforts. All other subjects participated in partial fulfillment of an introductory course requirement.

Videotaping Session

Videotaping procedure in Study 1 (Driver, 1987) was as follows: Subject-senders were seated in an armchair facing a board presenting the standard statement and a camera. The statement included an expression of interest in an available position, a brief personal history of the applicant, and a description of his or her qualifications for the job. Uniform below-the-shoulders to over-the-head, 50-sec color videotapes were made for each sender as she or he went through the reading task. Videotaping procedure in Study 2 was similar to that of Study 1 except that the standard-content text was replaced with randomly selected paragraphs from a variety of novels.

Attractiveness Ratings

The 10 judges in Study 1 rated both physical attractiveness (based on a picture without voice) and vocal attractiveness (based on voice without picture) of all senders. The 200 senders were divided into three groups, each consisting of approximately 67 senders (about half males and half females). Each group was rated on physical attractiveness in one session and on vocal attractiveness in a separate session, resulting in a total of six rating sessions per judge. Judges alternated physical and vocal attractiveness rating sessions with the constraint that two consecutive sessions did not involve the same senders. All subjects rated the attractiveness of the voice or physical appearance of each sender on 1-7 point scales (1 = very unattractive; 7 = very attractive). The concept of attractiveness, either vocal or physical, was not defined in the instructions and judges were not given any particular training prior to the task.

The procedure in Study 2 was similar except that 14 rather than 10 raters served as judges. The task of rating vocal attractiveness appeared more difficult when senders read different texts and the number of judges was increased to maintain an adequate level of reliability. We also thought that rating of vocal attractiveness may be influenced by the content of the paragraphs. As a safeguard against this possibility, we had another group

of 16 judges rate the attractiveness of the 200 transcripts that senders read. The instructions for this task were as follows: "Imagine you hear the enclosed passages being read. Each passage is read by a different person. Based on the content of each passage, how attractive will each person sound (1 = very unattractive; 7 = very attractive)?"

Personality Ratings

The 400 senders from Studies 1 and 2 were rated on 10 personality traits in one of the three channels: auditory (voice without picture), visual (picture without voice), and visual-auditory (picture with voice). Because of the large number of stimuli, the senders from each study were divided into three groups with about 67 senders per group (approximately half males and half females; first sex to be rated in each group was determined randomly). Judges were assigned to one and only one of the resulting 18 rating conditions (3 channels \times 2 studies \times 3 groups). The number of judges per rating condition ranged from 19 to 25, about half males and half females. There was no overlap in judges participating in the personality rating task and the attractiveness rating task. Furthermore, instructions for the personality rating task focused on ability to identify traits on the basis of vocal/visual cues; the issue of attractiveness was not mentioned.

All senders were rated on the same 10 5-point trait adjective scales (1 = not at all true of the person; 3 = somewhat true of the person; 5 = completely true of the person). The 10 adjectives were selected as representative of three dimensions: dominance (forceful, dominant, timid); achievement (competent, lazy, industrious); and likability (sensitive, sympathetic, quarrelsome, warm). The dominance and likability dimensions were selected because of their hypothesized differential sensitivity to vocal and facial attractiveness. In addition, these dimensions are similar to the potency and evaluation factors identified by the semantic differential technique (Osgood, Suci, & Tannenbaum, 1957), and they have also been found useful for describing nonverbally communicated impressions by many researchers (Bales, 1970; Mehrabian, 1970; Osgood, 1966; Rosenthal et al., 1979; Scherer, 1974b). The achievement dimension was added for exploratory purposes.

Prior to the rating of a particular sender, the judges noted whether they "don't know the person," "know the person somewhat (talk to him/her very infrequently)," or "know the person (talk to him/her regularly)." Only ratings by judges who noted they did not know the sender were considered in the analyses. This procedure eliminated an average of one judge from the number of judges rating each sender in the auditory condition and

an average of two judges from the number of judges rating each sender in the visual and visual-auditory conditions. Interjudge reliabilities were calculated on the basis of the reduced number of judges.

Results

Factor Analyses of Personality Ratings

Judges' ratings on each of the 10 adjectives were averaged, yielding 10 mean scores per sender in each experimental condition (scores on three adjective scales—timid, lazy, and quarrelsome—were reversed). These scores were examined in six factor analyses (3 conditions \times 2 studies), all based on partial correlations matrices (sex of sender was held constant). Since the adjectives were selected as representative of three dimensions, a three-factor solution was required. In all cases, we used principal component analysis followed by varimax rotation.

Five of the six analyses (auditory condition in Study 1 was the exception) yielded separate dominance and achievement factors. As predicted, three adjectives (forceful, dominant, and timid) were associated with dominance (mean loading = .89), and three other adjectives (competent, industrious, and lazy) were associated with achievement (mean loading = .86). In the sixth analysis, all six dominance- and achievement-related adjectives loaded on the same factor.

The next factor, likability, emerged in all six analyses. However, of the four adjectives that were expected to represent likability, only three (sensitive, sympathetic, and warm) did (mean loading = .88). The fourth adjective (quarrelsome) showed a moderate negative association with the likability factor (mean loading = .45; sign of the loading is positive because scores on quarrelsome were reversed) and a somewhat stronger positive association with dominance (mean loading = $-.79$ in the five analyses that distinguished between dominance and achievement); it emerged once (in the analysis yielding a combined dominance-achievement factor) as a single adjective factor (loading = $-.71$).

On the basis of these results it was decided to construct dominance, achievement and likability subscales, each representing the average of the three appropriate adjectives (high scores on the subscales indicated high levels of dominance, achievement, and likability). The tenth adjective, quarrelsome, was examined as a single item subscale in all the remaining analyses of the data; however, the results obtained for this adjective added little information and will not be reported.

Reliability of Attractiveness and Personality Ratings

To calculate effective interjudge reliabilities, we computed the mean correlation among judges' ratings and adjusted the resulting coefficients by the Spearman-Brown formula (Rosenthal & Rosnow, 1984). Effective reliabilities of vocal and physical attractiveness were .86 and .88, respectively, in Study 1; and .84 and .93, respectively, in Study 2. It thus appears that reliability of vocal attractiveness is adequate, although somewhat lower than that of physical attractiveness. Effective reliability of transcript attractiveness was .83. As expected, transcript attractiveness was positively related to vocal attractiveness, but the relationship was rather weak (partial $r = .17$; sex of senders was held constant). Furthermore, transcript attractiveness was not related to any of the subscales (partial correlations ranged from $-.06$ to $.05$) and, consequently, did not moderate any effects of vocal attractiveness. This variable will not be discussed further.

Effective reliabilities for the three subscales were computed for each of 18 groups of judges that were employed. The resulting coefficients ranged from .79 to .96. Mean effective reliabilities (across the 18 groups) for each subscale were .92 for dominance, .87 for achievement, and .81 for likability.

The Attractiveness Stereotype

Table 1 presents means and standard deviations of vocal attractiveness (based on ratings of voice without picture) and of physical attractiveness (based on ratings of picture without voice). Partial correlations (sex of

TABLE 1

Means and Standard Deviations of Vocal and Physical Attractiveness by Sex

	Study 1				Study 2			
	Vocal attractiveness		Physical attractiveness		Vocal attractiveness		Physical attractiveness	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Males	3.84	.886	3.41	.757	3.60	.551	3.20	.813
Females	3.74	.775	3.51	.897	3.80	.599	3.53	.909
Total	3.79	.832	3.46	.829	3.70	.583	3.36	.875

sender was held constant) between the two types of attractiveness were .16 in Study 1 and .02 in Study 2 (differences between correlations computed for each sex were small and nonsignificant).

The attractiveness scores were used to divide senders into high moderate, and low levels of vocal attractiveness (cutoff points were 4.15 and 3.55 in Study 1 and 3.87 and 3.45 in Study 2); and high, moderate, and low levels of physical attractiveness (cutoff points were 3.85 and 3.05 in Study 1 and 3.75 and 2.95 in Study 2); the two dimensions were crossed, resulting in a 3×3 factorial design. Senders' scores on the dominance, achievement, and likability subscales were examined in a series of analyses of variance in which level of vocal attractiveness, level of physical attractiveness, and sex of sender were the between-subjects factors and subscale (dominance/achievement/likability) the within-subjects factor. Results for Study 1 will be reported as F_1 and r_1 ; results for Study 2 will be reported as F_2 and r_2 .¹ Only one interaction involving sex was significant and its effect was not interpretable. Accordingly, this variable will not be discussed further.

The vocal attractiveness stereotype. Table 2 presents mean ratings by level of vocal attractiveness for the auditory condition (top half) and for the visual-auditory condition (bottom half). It can be seen that in both conditions, higher attractiveness produced higher ratings across the three subscales. The linear contrast of vocal attractiveness was significant in the auditory condition, $F_1(1,182) = 107.91$, $p < .001$, $r_1 = .61$; $F_2(1,182) = 62.34$, $p < .001$, $r_2 = .51$, as well as in the visual-auditory condition, $F_1(1,182) = 56.38$, $p < .001$, $r_1 = .49$; $F_2(1,182) = 31.95$, $p < .001$, $r_2 = .39$. An analysis that included both the auditory and the visual-auditory conditions indicated that the latter produced smaller vocal attractiveness effects, Condition \times Vocal Attractiveness linear interaction $F_1(1,182) = 38.82$, $p < .001$, $r_1 = .42$; $F_2(1,182) = 7.77$, $p < .01$, $r_2 = .20$.²

¹A measure of effect size, the Pearson r was computed as

$$r = \sqrt{\frac{F_{1, \text{---}}}{F_{1, \text{---}} + dfe}} \quad (\text{Rosenthal \& Rosnow, 1984})$$

The magnitude of the effect is indicated by r^2 , which is an estimate of the variance accounted for. Alternatively, Rosenthal and Rubin (1982) introduced the binomial size display, which shows that r is identical to the difference between two success rates (e.g., an increase in success rates from 40% to 60% is associated with a Pearson r of .20).

²We conducted regression analyses in which the average of dominance, achievement and likability was predicted from sex of sender and vocal attractiveness. In the auditory condition, sex (first predictor) produced $r_1 = .05$, $r_2 = .14$; vocal attractiveness increased the multiple correlation to $r_1 = .64$, $r_2 = .53$ and the change in variance accounted for was sig-

TABLE 2

**Mean Ratings by Vocal Attractiveness, Experimental Condition,
and Subscale**

Subscale	Study 1			Study 2		
	Vocal attractiveness			Vocal attractiveness		
	Low	Medium	High	Low	Medium	High
Auditory condition						
Dominance	2.48	2.92	3.41	2.61	2.96	3.08
Achievement	3.01	3.35	3.74	3.14	3.31	3.49
Likability	2.75	2.91	3.03	2.85	2.91	3.07
M	2.75	3.06	3.39	2.86	3.06	3.21
Visual-auditory condition						
Dominance	2.50	2.74	3.12	2.66	2.87	3.00
Achievement	3.00	3.22	3.40	3.16	3.30	3.46
Likability	2.88	2.92	2.96	2.82	2.82	2.94
M	2.79	2.96	3.16	2.88	3.00	3.13

The extent to which effects of vocal attractiveness were moderated by type of judgment was also examined. It can be seen that in general the largest increase in ratings from low to high attractiveness was obtained for dominance, followed by achievement, and then by likability. The Subscale linear \times Vocal Attractiveness linear interaction was significant in the auditory condition, $F_1(1,364) = 42.27$, $p < .001$, $r_1 = .43$; $F_2(1,364) = 6.64$, $p < .025$, $r_2 = .19$, as well as in the visual-auditory condition, $F_1(1,364) = 39.87$, $p < .001$, $r_1 = .42$; $F_2(1,364) = 5.44$, $p < .05$, $r_2 = .17$.

The physical attractiveness stereotype. Table 3 presents mean ratings by level of physical attractiveness for the visual condition (top half) and for the visual-auditory condition (bottom half). It can be seen that in

nificant $F_1(1,197) = 134.94$, $F_2(1,197) = 73.12$, $ps < .001$. In the visual-auditory condition, sex (first predictor) produced $r_1 = .16$, $r_2 = .27$. Vocal attractiveness (second predictor) increased the multiple correlation to $r_1 = .57$, $r_2 = .48$ and the change in variance accounted for was significant, $F_1(1,197) = 86.13$, $F_2(1,197) = 38.60$, $ps < .001$. When vocal attractiveness was entered as a third predictor (after sex and physical attractiveness), it increased the

TABLE 3
Mean Ratings by Physical Attractiveness, Experimental Condition,
and Subscale

Subscale	Study 1			Study 2		
	Physical attractiveness			Physical attractiveness		
	Low	Medium	High	Low	Medium	High
Visual condition						
Dominance	2.72	2.77	3.00	2.65	2.81	3.02
Achievement	3.09	3.32	3.35	3.16	3.23	3.30
Likability	2.80	3.04	3.09	2.89	2.94	2.98
M	2.87	3.04	3.15	2.89	2.99	3.10
Visual-auditory condition						
Dominance	2.72	2.78	2.84	2.77	2.85	2.92
Achievement	3.05	3.30	3.26	3.28	3.32	3.34
Likability	2.72	2.98	3.06	2.79	2.86	2.93
M	2.83	3.02	3.05	2.95	3.01	3.06

both conditions, the higher the attractiveness the higher the ratings across the three subscales. The linear contrast of Physical Attractiveness was significant in the visual condition $F_1(1,182) = 54.02$, $p < .001$, $r_1 = .48$; $F_2(1,182) = 39.86$, $p < .001$, $r_2 = .42$, as well as in the visual auditory condition $F_1(1,182) = 18.90$, $p < .001$, $r_1 = .31$; $F_2(1,182) = 6.42$, $p < .025$, $r_2 = .18$. An analysis of both the visual and visual-auditory conditions showed smaller physical attractiveness effects in the visual-auditory condition, Condition \times Physical Attractiveness linear $F_1(1,182) = 3.53$, $p < .07$, $r_1 = .14$; $F_2(1,182) = 8.84$, $p < .005$, $r_2 = .22$. It appears, therefore, that effects of both vocal and physical attractiveness are smaller when judges are exposed to auditory plus visual input than when they are exposed to only auditory or only visual input.³

multiple correlation from $r_1 = .39$, $r_2 = .33$ to $r_1 = .63$, $r_2 = .51$, and the change was significant $F_1(1,196) = 78.80$, $F_2(1,196) = 39.40$, $ps < .001$. In all of these analyses, the amount of variance accounted for by a Vocal Attractiveness \times Sex interaction term was not significant, $F_s < 1.40$.

³We conducted regression analyses in which the average of dominance, achievement

Type of judgment (subscale) did not moderate the effect of physical attractiveness in a consistent manner. The visual condition in Study 1 and the visual-auditory condition in Study 2 did not produce Subscale \times Physical Attractiveness interactions. In the visual-auditory condition of Study 1, the effects of physical attractiveness were more pronounced for likability followed by achievement and then by dominance, Subscale linear \times Physical Attractiveness linear $F_1(1,364) = 6.96$, $p < .01$, $r_1 = .19$. In the visual condition of Study 2, however, the effects of physical attractiveness were more pronounced for dominance, followed by achievement and likability, Subscale linear \times Physical Attractiveness linear $F_2(1,364) = 6.44$, $p < .025$, $r_2 = .18$. Overall it appears that while Study 1 provided support for predictions regarding the greater effects of vocal attractiveness on dominance and of physical attractiveness on likability, Study 2 did not.

Vocal and physical attractiveness combined. Are the effects of the two stereotypes additive or interactive? The relevant data are the mean ratings (across the three subscales) for the Vocal Attractiveness \times Physical Attractiveness factorial in the visual-auditory condition. These ratings increased from 2.70 (low vocal/low physical attractiveness) to 3.28 (high vocal/high physical attractiveness) in Study 1 and from 2.78 to 3.26 in Study 2. Although the pattern of means suggested that effects of attractiveness in one channel were more pronounced at higher levels of attractiveness in the other channel, the Vocal \times Physical Attractiveness interactions were small, $F_1(4,182) = .63$, $F_2(4,182) = 1.77$. At present, therefore, it must be concluded that effects of attractiveness are additive.

Discussion

The starting point of the present paper was that individual differences in vocal attractiveness may elicit different impressions of personality. Accord-

and likability was predicted from sex of sender and physical attractiveness. In the visual condition, sex (first predictor) produced $r_1 = .32$, $r_2 = .36$; physical attractiveness increased the multiple correlation to $r_1 = .61$, $r_2 = .53$ and the change in variance accounted for was significant $F_1(1,197) = 84.96$, $F_2(1,197) = 43.92$, $ps < .001$. In the visual-auditory condition, sex (first predictor) produced $r_1 = .16$, $r_2 = .27$; physical attractiveness (second predictor) increased the multiple correlation to $r_1 = .39$, $r_2 = .33$, and the change in variance accounted for was significant, $F_1(1,197) = 29.05$, $F_2(1,197) = 8.12$, $ps < .006$. When physical attractiveness was entered as a third predictor (after sex and vocal attractiveness), it increased the multiple correlation from $r_1 = .57$, $r_2 = .48$ to $r_1 = .63$, $r_2 = .51$, and the change was significant $F_1(1,196) = 23.39$, $F_2(1,196) = 8.95$, $ps < .005$. In all of these analyses, the amount of variance accounted for by a Physical Attractiveness \times Sex interaction term was not significant, $F_s < 1.73$.

ingly, a person may be credited with attributes that are based on a stereotype held by observers. This notion received strong empirical support. First, observers were able to agree on what is vocally attractive. Second, senders with more attractive voices were rated more favorably than senders with less attractive voices. Both effects were obtained in two studies using somewhat different methods. In one study, judges rated senders reading a standard-content speech; in the other, judges rated senders reading randomly selected paragraphs. The replication of the vocal stereotype effects across two studies indicates that the phenomenon is robust.

It might be argued that the association between judgments of vocal attractiveness and personality ratings are correlational in nature, reflecting a relation between two similar judgments about attractiveness. Yet another possibility is that although the two judgments are different, vocal attractiveness could have been the effect rather than the cause of personality ratings.

There are two reasons why the attractiveness and personality ratings cannot be considered similar. First, judges of attractiveness were asked to rate the voice; personality was not mentioned. In contrast, judges of personality were asked to rate personality; attractiveness of the voice was not mentioned. It is difficult to imagine why the judges would focus on a dimension that was not even mentioned to them. Second, some of the adjectives on which personality was rated do not lend themselves for use as vocal characteristics. For example, the two achievement-related adjectives, *competent* and *industrious*, can readily be used in a description of a person but not in a description of a voice. Accordingly, the obtained relation between vocal attractiveness and the achievement dimension cannot reflect a correlation between two similar judgments about vocal attractiveness.

Similarly, the view that personality ratings were the cause for rather than the effect of attractiveness ratings does not seem plausible. Evidently judges of personality based their ratings, at least in the auditory condition, on some vocal characteristics. There were simply no other sources of information. If vocal attractiveness ratings were the consequence of personality impressions, we will have to assume that the judges who were instructed to provide these ratings first evaluated some other undetermined characteristics of the voice, then made an inference of personality from such characteristics, and finally ended with an inference of attractiveness from impressions of personality. Such a process does not seem likely when the instructions did not even mention anything about personality.

How important is the vocal attractiveness stereotype? Such a question is difficult to answer in an absolute sense. Fortunately, the influence of

physical attractiveness provides a natural baseline. The results showed that effects of vocal attractiveness (mean $r = .50$ across the auditory and visual-auditory conditions) were not smaller than those of physical attractiveness (mean $r = .35$ across the visual and visual-auditory conditions). Unfortunately, the attempt to identify dimensions that differentiate between the effects of vocal and physical attractiveness was only partially successful. In Study 1, vocal attractiveness exerted greater effects on dominance while physical attractiveness exerted greater influence on likability. However, this pattern was not replicated in Study 2. How are we to account for these results? Dominance seems to represent an active attitude—a person dominates someone else; likability seems to represent a passive attitude—a person is liked by someone else. The senders in Study 1 expressed strong interest in the prospects of obtaining a job. The message was delivered in an interpersonal context and its contents indicated a degree of personal involvement. The senders in Study 2, on the other hand, did not deliver a message to another person. They read a paragraph that clearly meant nothing to them and had no interpersonal significance. When senders are passive and/or disinterested, their voices may be less likely to affect judgments of dominance. Needless to say, this is simply a post hoc speculation.

Effects of both vocal and physical attractiveness were smaller in the multiple channel than in the single channel. In particular, judges who heard and saw the senders were (a) less influenced by vocal attractiveness than were judges who only heard the senders, and (b) less influenced by physical attractiveness than were judges who only saw the senders. It is almost as if there is a constant amount of bias due to attractiveness. In a single channel all of the amount is taken by the single channel attractiveness stereotype; in a multiple channel (voice plus face), the amount is divided between the available stereotypes so that the effect of each stereotype becomes smaller. At the very least, this finding has an important methodological implication. Studies investigating attractiveness in a single channel, as most studies of physical attractiveness do, are in danger of distorting the magnitude of its effects if in reality it usually is combined with other channels.

Left for future research are a variety of issues related to the vocal attractiveness stereotype. These may include the auditory or acoustic correlates of vocal attractiveness, the question of which personality dimensions are more influenced by vocal attractiveness as opposed to physical attractiveness, and the self-fulfilling effects of vocal attractiveness. Snyder et al. (1977) demonstrated the self-fulfilling effects of physical attractiveness. The next step is to introduce vocal attractiveness into their design, allowing a test of the effects of both attractiveness stereotypes on actual behavior.

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