BIOLOGICAL SEX AND COMMUNICATION APPREHENSION

James C. McCroskey Timothy J. Simpson Virginia P. Richmond

Based upon earlier research which has indicated that males and females may differ in their levels of communication apprehension and shyness, this study explored the possible impact of biological sex on general communication apprehension, shyness, and apprehension about broad communication contexts. Samples of 778 college students and 106 secondary school teachers completed measures of general communication apprehension, shyness, and apprehension about communication in the contexts of public speaking, meetings, small groups, and interpersonal conversation. Results indicate that males may be slightly more shy than females, females may be slightly more apprehensive about public speaking than males, but female and males do not differ meaningfully in terms of general communication apprehension.

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Communication apprehension (CA), the fear or anxiety associated with either real or anticipated communication with another person or persons, has been the subject of over 200 reported studies over the past decade. Biological sex, although sometimes controlled for, has seldom been examined in these studies. Conclusions and summary statements about CA (McCroskey, 1977) usually fail even to mention any possible relationship between sex and CA.

In contrast, writers concerned with shyness have directed specific attention to the relationship between that variable and biological sex. Zimbardo, for example, in a study of 2,482 American students found that 44% of the men reported being shy, while 39% of the women gave a similar report (Zimbardo, 1977). Given the size of this sample, this difference is highly significant statistically, although the actual difference is not large.

In the only previously reported study involving both CA and shyness which examined biological sex, Talley found opposing results for the relationships between sex and shyness and sex and CA (Talley, 1979). Employing the same 119 male and 94 female subjects, Talley found the males to be significantly more shy than the females, but the females were found to have higher CA than the males. Interestingly, the results of this portion of the study were not included in the published report of the research (Talley and Richmond, 1980). This exclusion may be attributed to the fact that the rela-

tionship between sex and shyness accounted for only 1% of the variance and that between sex and CA accounted for only 2% of the variance. These small, even though statistically significant, effects may provide an explanation of why previous research reports generally have ignored the biological sex variable.

Additional findings reported by Talley (1979), however, suggest that discounting the sex variable may be premature. In her research, gender orientation, sometimes referred to as androgony or psychological sex, was a powerful predictor of both shyness (20% of the variance) and CA (18% of the variance). Androgynous subjects were found to be substantially lower than other subjects in both shyness and CA, and subjects classified as masculine were somewhat lower than subjects classified as feminine in both shyness and CA. These results were consistent with earlier research reported by Greenblatt, Hasenduer and Friemuth (1980) and McDowell, McDowell, Hyerdahl and Steil (1978).

These results are particularly significant in that they suggest orientations that are acculturated (i.e., gender orientation) are meaningfully associated with shyness and CA. Similar patterns relating to anxiety-type responses have been observed in other fields. For example, math anxiety has been found to be experienced much more commonly by females than by males. Any findings linking anxiety responses to biological sex are very difficult to explain biologically. Such differences, generally, are

COMMUNICATION QUARTERLY, Vol. 30, No. 2, Spring 1982

129

more parsimoniously explained by the differential acculturation of the two sexes. It may be, then, that within a given culture, in this case the United States culture, males or females are conditioned to be more anxious generally about communication. Or, it may be that males are conditioned to be more anxious about some communication situations, but females are conditioned to be more anxious about other communication situations. The present study was designed to investigate these possibilities. Specifically, the research questions posed were:

- Q1 Do females and males differ in their general levels of shyness or communication apprehension?
- Q₂ Do females and males differ in their levels of apprehension about communication within broad contexts?

Method

Samples

Two samples of subjects were employed in this investigation. The primary sample was 778 college students voluntarily enrolled in basic classes in communication. This sample was chosen to be compatible with those employed by both Talley (1979) and Zimbardo (1977). The sample included 419 males and 359 females. The second sample was coposed of 106 secondary school teachers: 44 males and 62 females. This sample was selected because previous research has indicated the distribution of CA among public school teachers is approximately the same as that commonly found among college student populations, but the subjects, due to increased age (median = 37), represent a wider variety of acculturation experiences. The second sample was voluntarily enrolled in graduate classes in instructional communication. All subjects completed the research instruments at the beginning of the term prior to any discussion of shyness or CA.

Measurement

The same instruments were employed for both groups of subjects. Each subject was asked to indicate her or his sex. In addition, they were asked to complete three general measures of CA, two general measures of shyness, and an apprehension measure for each of four broad contexts of communication — public speaking, meetings, small groups, and conversations.

General CA. The 25-item Personal Report of Communication Apprehension (PRCA-25) developed by McCroskey (1970, 1978) was the first instrument employed to measure general CA. This is the most widely used instrument in CA research and has a strong record for both reliability and va-

lidity (McCroskey, 1978). In this investigation, the reliability was .95 for the student sample and .93 for the teacher sample.

Although the PRCA-25 is reliable and has shown strong predictive validity across communication contexts, it is heavily dominated by items which are specifically related to public speaking (10 items) and includes several other items for which the communication context is not clear. Thus, two other instruments presumed to measure general CA were included. Neither of these has the public speaking bias of the PRCA-25, and both have been found to correlate in the neighborhood of .90 with the PRCA-25. The first of these was the Personal Report of Communication Fear (FEAR). This is a 14-item scale originally designed by McCroskey to be used with pre-literate children as well as older children and adults (McCroskey et al., 1981). In this investigation, the FEAR had an internal reliability of .90 for both the student sample and the teacher sample. The other instrument employed was a new version of the PRCA, a 24-item scale which includes an equal number of items representing the contexts of public speaking, meetings, small groups, and conversation (McCroskey, 1981). In this investigation, the PRCA-24 had an internal reliability estimate of .96 for both the student sample and the teacher sample.

Shyness. The first measure of shyness employed in this investigation was the single-item, forced choice instrument previously employed by Zimbardo (1977). It reads: "Do you presently consider yourself to be a shy person? _____ yes _____ no" Zimbardo reports no reliability data for this instrument, and since it is a single item, no internal reliability estimate was possible. Consequently, the student sample was asked to complete the instrument a second time, four months after they had first completed it. The test-retest reliability estimate was .61, a level of reliability distinctly less than desirable but within the range generally considered acceptable by psychologists.

The second measure of shyness employed was the Shyness Scale (SHY) developed by McCroskey (McCroskey et al., 1981). This is a 14-item measure with previously reported high reliability. In this investigation, SHY had an internal reliability estimate for the college sample of .92 and an estimate of .95 for the teacher sample. The test-retest reliability over a four month period was .79.

Context CA. Ten-item instruments designed to measure CA with regard to four general communication contexts were developed by McCroskey and Richmond (1980). The contexts for which the instruments were designed were public speaking (PUBLIC), meetings (MEETING), small groups (GROUP), and interpersonal conversations (CON-VERSE). Although no previous reliability or validity data have been reported, each instrument has

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good face validity. Hence, these were chosen for use. In the present investigation, the internal reliability estimates for the measures for college students and teachers, respectively, were: PUBLIC .88, .86; MEETING .92, .94; GROUP .91, .91; and CONVERSE .86, .87. Since the PRCA-24 instrument includes six items for each of these contexts, sub-scores for each could be computed. The estimated internal reliabilities for each sub-score for college students and teachers, respectively, were: PUBLIC-6 .88, .83; MEETING-6 .93, .93; GROUP-6.89, .88; and CONVERSE-6 .82, .75.

Data Analyses. The data were subjected to a series of single-classification analyses of variance with sex as the classification variable and each of the multiple-item measures serving as dependent variables. The single-item shyness (Zimbardo) data were subjected to chi-square analysis. The estimated power for the analyses of variance was .79 for a small effect, .99 for a medium effect, and .99 for a large effect for the college sample (Cohen, 1977). For the teacher sample, the estimates were .29 for a small effect, .94 for a medium effect, and .99 for a large effect. Power estimates for the chisquare analyses were as follows: College sample .79 for a small effect, .99 for a medium or large effect: teacher sample .17 for small effect, .87 for medium effect, .99 for large effect. Although multivariate analyses of variance also were computed, they provided no insight beyond that obtained from the univariate results and, thus, will not be reported here.

Results

College Sample.

The means for all measures for females and males are reported in Table 1. As noted in that table, females were found to score significantly higher than males on the PRCA-25. However, this difference accounted for only 1% of the variance in PRCA-25 scores. No significant differences between the sexes were observed on the other two general measures of CA, PRCA-24 or FEAR. A significant difference was observed on the SHY scale, with males reporting themselves as more shy than females. Again, however, only 1% of the variability in shyness was accounted for by this difference. This pattern of higher male shyness was also observed in the data from the Zimbadro scale (see Table 3). While 25% of the females considered themselvs shy, 30% of males reported themselves to be shy. Approximately 2% of the variance was explained by the sex variable.

No significant differences between males and females were observed on either the ten- or sixitem measures of CA in either meeting or small group contexts. Both measures, however, generated significant differences between the sexes in the public speaking and interpersonal conversation contexts. Females reported slightly more CA concerning public speaking, while males reported slightly more CA concerning interpersonal conversations.

Teacher Sample.

The means for all measures for females and males are reported in Table 2. Females were found to score significantly higher than males on the PRCA-25, the differences accounting for 3% of the variance. The only other significant differences observed were on the two measures of CA in the public speaking setting. On both measures, the females were found to score higher than the males, with the difference accounting for 4% of the variance.

Although none of the results relating to shyness were statistically significant (see Tables 2 and 3), the pattern of results compares closely to that of the college sample. On the SHY scale, males re-

Table 1 Scale Means by Sex: College Sample						
Scale	Female Male Difference				Variance	
PRCA-25	71.2	68.8	2.4	4.31	.01	
PRCA-24	65.2	64.1	1.1	.94	*	
FEAR	36.6	36.1	.5	.72	*	
SHY	37.0	39.2	-2.2	10.09	.01	
PUBLIC-10	33.8	31.5	2.3	15.36	.02	
PUBLIC-6	20.2	18.8	1.4	17.01	.02	
MEETING-10	27.5	27.4	.1	.08	*	
MEETING-6	16.3	16.1	.2	.30	*	
GROUP-10	25.9	25.7	.2	.50	*	
GROUP-6	15.3	14.9	.4	.92	*	
CONVERSE-10	22.7	23.7	-1.0	4.99	.01	
CONVERSE-6	13.4	14.3	-0.9	10.21	.01	

*Not statistically significant, p>.05.

COMMUNICATION QUARTERLY SPRING 1982

131

Table 2 Scale Means by Sex: Secondary Teacher Sample						
Scale	Female	Female-Male Difference	Female-Male Difference F-ratio Variance			
PRCA-25	70.3	66.3	4.0	2.79	.03*	
PRCA-24	65.0	62.3	2.7	1.26	**	
FEAR	36.6	36.5	.1	.00	**	
SHY	39.6	41.4	-1.8	.61	**	
PUBLIC-10	31.8	29.4	2.4	4.03	.04	
PUBLIC-6	19.2	17.6	1.6	4.23	.04	
MEETING-10	28.8	27.0	1.8	1.71	**	
MEETING-6	17.0	15.7	1.3	2.21	**	
GROUP-10	25.0	25.3	3	.02	**	
GROUP-6	14.7	14.8	1	.00	**	
CONVERSE-10	23.6	23.7	1	.03	**	
CONVERSE-6	14.1	14.3	2	.06	**	

*Significant, p<.05, one-tailed test.

**Not statistically significant, p>.05.

Table 3 Frequency of Reported Shyness							
	College Sample*		Teacher Sample**				
	Female	Male	Female	Male			
Shy	89 (25%)	127 (30%)	13 (21%)	12 (27%)			
Not Shy	270 (75%)	292 (70%)	49 (79%)	32 (73%)			

*Chi-square = 117.07, Phi = .15, Variance = .02, p<.001

**Chi-square = .57, Phi = .07, NSD.

ported higher scores, and more males reported being shy (27%) than did females (21%). While not too much should be made of differences that are not statistically significant, given the low power of these tests, small effects were not detectable in these analyses. Thus, is it more likely that real, although small, differences do exist which are approximately of the magnitude of those found in the college sample.

Conclusions

Our first research question inquired about possible differences between females and males with regard to general levels of CA and shyness. The question cannot be answered with a clearcut yes or no. With reference to CA, the appropriate answer seems to be no. Although significant differences were found on the PRCA-25 for both samples, with females scoring higher than males, no significant differences were found on either the FEAR or PRCA-24 measures. Since the PRCA-25 has a bias in items directed toward public speaking which is not present in the other instruments, the best explanation of these discrepant results is that the observed effects are a function of public speaking CA rather than general CA. This negative conclusion is also supported by the fact that, even with the substantial number of public speaking items on the PRCA-25, the amount of variance attributable to sex was only 1% for the college sample and 3% for the teacher sample. Also pointing in this direction is the fact that the PRCA-25 and PRCA-24 were found to correlate .93 for the college sample, the correlation between PRCA-25 and FEAR was .85, and that between PRCA-24 and FEAR was .83 (correlations for the teacher sample were virtually identical). Thus, these instruments appear to be measuring approximately the same thing, and biological sex appears to be, at most, very marginally related.

With regard to shyness, the appropriate answer to our question appears to be yes. In the college sample, males were found to be significantly more shy than females both on the SHY scale and the Zimbardo scale. Although the differences for the teacher sample were not significant statistically (most likely because of low power as a function of low sample size) the differences observed followed the same pattern as those observed with the college sample. The social significance of this observation, however, is questionable. The observed ef-

fects accounted for only 1 to 2% of the variance in shyness. The best conclusion, therefore, may be that males tend to be more shy than females, but not much more so.

Our second research question inquired about possible differences between females and males with regard to their levels of apprehension within differing general communication contexts. Again, we cannot respond with a simple yes or no response. With regard to the contexts of meetings and small groups, since no difference even approached significance and there was very high power at least in the analyses of the college data, we may feel safe in concluding that no meaningful difference exists between females and males. The results concerning the public speaking context, on the other hand, clearly indicate higher CA in this context for females than for males, accounting for 2 to 4% of the variance. An opposite pattern, accounting for only 1% of the variance, was observed for the interpersonal conversation context for the college sample. Thus, while males may be slightly more apprehensive than females in the conversational context, the difference, if it exists throughout the population, likely is socially inconsequential.

The results involving the public speaking context may be of some importance. Although the variance attributable to the biological sex variable, 2 to 4%, is not large, it may represent somewhat of a barrier to advancement of women within our society generally. Many occupations require public presentations, particularly as a person moves into higher positions. To the extent that women are generally more apprehensive about this communication context, we might expect a lower proportion of them (compared to men) to seek training in this type of communication, to volunteer to communicate in this context, and, as a result, to advance within occupations in which such communication is required. Even 2% of the variability, therefore, may represent a meaningful barrier to the economic and social advancement of women in the society.

Finally, we wish to note the strong correspondence between the results of this investigation and those in the Talley (1979) and Zimbardo (1977) studies. The variance in general CA and shyness attributable to biological sex observed in these studies is virtually identical to that observed by Talley (1979). Similarly, Zimbardo (1977) reports that 5% more males are shy than females, and we found the exact same difference in our college sample and 6% in our teacher sample. This strong similarity of results enhances our ability to generalize the results of the combined studies. We feel reasonably confident in concluding, therefore, that within the United States culture, males may be slightly more shy than females, but females are slightly more apprehensive about communicating within the public speaking context than males, even though females and males do not differ with regard to general level of communication apprehension.

Given these results and those obtained by Talley (1979) concerning androgyny we would caution future researchers to expect a much higher association between shyness or communication apprehension and psychological sex (gender orientation) than has been observed with biological sex. Acculturation rather than biology, is likely to be a meaningful predictor of communication orientations such as communication apprehension and shyness.

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* Henry Fairlie. The Seven Deadly Sins Today. Notre Dame, Indiana: University of Notre Dame Press, 1979.

Consider, for example, how sin could be used as a basis for goal setting. What do people seek when they communicate? One person's altruism is clearly another person's decadence. The complexity of the exchanges possible in a sin-paradigm suggests some original conceptions in motivations and communication goals.

Though it appears to be a book on theology, it is more a study in political and social psychology. It provides a structure for the study of the dark side of human behavior and motivations, and provides a clue to some of the lurking and hidden motives that makes the communicating human so defiant of logical constructions and govening generalizations. For those interested in the means of persuasion available in the given case, and why they are persuasive, this book will be an interesting jog to imagination.

These essays were originally published in New Republic and reprinted in many newspapers. They are on a topic that is not generally popular, sin, and they take a position that contradicts much popular opinion about it. Fairlie is an extraordinarily literate man. His views on the relationship of sin and society are important considerations for those who attempt to theorize about how and why people communicte with one another.