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MEASURES OF COMMUNICATION-BOUND ANXIETY

JAMES C. McCROSKEY

The Ad Hoc Committee on Evaluation in speech communication was formed by the Speech Association of America and charged with the responsibility to examine the needs of the field in evaluation and measurement. Among the recommendations of this committee was the following:

Since many problems in speech communication pedagogy may result from students' inhibitions rather than their inability, we recommend the development of instruments to measure at various ages the extent of communication-bound anxiety.1

The purpose of this paper is to report the development of several measures of communication apprehension. These measures were developed as a part of a continuing research program investigating the effects of systematic desensitization on communication apprehension.

TYPES OF COMMUNICATION-BOUND ANXIETY

The first concern in the development of measures of communication-bound anxiety is to determine what to measure. An examination of the literature concerning "stage fright" indicates that this term is usually used to refer to anxiety in a public speaking situation. An instrument designed by Gilkinson to measure this type of anxiety has been available for years.2 More recently, a shorter form of this early instrument has been reported by Paul.3

Friedrich, however, on the basis of factor analytic research, has suggested that these instruments are not unidimensional.4 His analysis produced three factors for males which he labeled "speech anxiety," "exhibitionism," and "reticence." The analysis for female subjects produced four factors, the same three as for males plus one labeled "physical manifestations." Whether these factors are "real" dimensions of communication-bound anxiety remains to be determined. A careful examination of the results of Friedrich's analysis suggests that they may not be. The first two factors for both males and females accounted for most of the explained variance. Although these two factors were assigned labels that suggest independent dimensions of communication-bound anxiety, an examination of the items included in the two factors indicates that the most significant difference between the two groups of items is that the majority of the items in the "speech anxiety" factor are negatively worded (all but three of the 23 items for the male

1 Howard Gilkinson, "Social Fears as Reported by Students in College Speech Classes," Speech Monographs, IX (1942), 141-160.
group and all but seven of 22 for the female group), while almost all of the items in the "exhibitionism" factor are positively worded (all 26 of the items for the male group and all but one of the 29 items for the female group).

One of the major problems with the factor analytic technique is that it will almost always indicate multidimensionality, whether such multidimensionality is actually present or not. Analyses I have performed, which included many of the same items tested by Friedrich, produced conflicting results. When factor analyzed in conjunction with scales known to measure another variable (test anxiety), the items on factors one and two in the Friedrich analysis were maintained in a single, stable factor. However, when factor analyzed without the unrelated items, the previously stable factor separated into two factors comparable to those obtained by Friedrich. Although there is an obvious need for more research to determine the dimensionality of the Gilkinson and Paul instruments, both Friedrich's and my findings suggest that multidimensionality must be a major concern in the development of any new instruments.

Even if we are to grant the unidimensionality of the Gilkinson and Paul instruments, there is need for the development of additional instruments. Their instruments focus on communication-bound anxiety in only one context—public speaking. There are good reasons to believe that this is not the only context in which anxiety can interfere with communication, and possibly it is not even the most important context. The extended case study research of Phillips provides us with an excellent picture of the individual with communication-bound anxiety.6 Phillips uses the term "reticent" and avoids talking about "stage fright" in the usual sense. He defines the reticent individual as "a person for whom anxiety about participation in oral communication outweighs his projection of gain from the situation." Such people not only evidence the normal "stage fright" behaviors related to public speaking, they also experience problems in communicating in small groups and in interpersonal transactions. They tend to avoid communicating as much as possible.

The work of Phillips suggests a broadly based anxiety related to oral communication rather than a variety of "types" of communication-bound anxiety. I have labeled this phenomenon "communication apprehension." The development of instruments to measure communication apprehension has been based on the assumption that the phenomenon being measured is unidimensional. However, factor analysis has been employed consistently as a test of multidimensionality. The results of such tests are discussed below.

**Choice of Measurement Approach**

Researchers have used three types of instruments to measure communication-bound anxiety: observer ratings, devices for indexing physiological changes, and self-report scales.7 As Clevenger has noted, these measures do not appear to measure the same thing; the correlations between the various types of measures are typically very low.8 My choice of measurement approach was made by a process of elimination. Observer ratings were excluded first because of the notorious difficulty in obtaining reliable ratings and, most importantly, because

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6 Phillips, p. 40.


8 Clevenger, p. 138.
such ratings must necessarily be based on observable behaviors. Many behaviors presumed to be related to communication apprehension are either impossible or, at best, extremely difficult to observe. These behaviors relate to the withdrawal tendency associated with communication apprehension. The severely anxious person is likely not to communicate at all in a given instance; thus no rating comparable to one for actual communication could be assigned. Even if this problem could be overcome, there would be a need to observe an individual in a number of communication contexts if an index of communication apprehension across contexts were to be obtained. Because of all of these difficulties, the observer rating approach was considered inappropriate.

Because the primary need for instrumentation for communication apprehension is a measure that can be administered easily to large numbers of individuals at low cost, physiological indexes were also ruled out. Mechanical devices for indexing physiological changes are relatively expensive and not available on many college campuses or in most elementary and secondary schools. Equally important, mechanical devices have some of the same difficulties as observer ratings. It is very difficult, if not impossible, to obtain physiological indexes during some communication transactions. And to obtain a reliable physiological indicant of communication apprehension would necessitate obtaining indexes from a variety of types of communication transactions. In addition, physiological indexes are inherently incapable of measuring withdrawal responses in an actual communication environment.

Because of the aforementioned problems with the other approaches to measurement of communication-bound anxiety, I selected the self-report scales approach, specifically the Likert-type scale. This approach has three major advantages. First, such scales are easy and inexpensive to administer. Second, they can tap anxiety responses across a variety of communication contexts at one time. Third, Likert-type self-report scales, when properly developed, normally are highly reliable. Validity of such scales is often questioned, however. This problem will be considered below.

THE SCALES AND THEIR DEVELOPMENT

Four scales have been developed. Three of the scales, each for a different age level, are intended to measure the broadly-based anxiety referred to above as communication apprehension. The fourth scale was designed to measure anxiety only in the public speaking context. The four scales are: the Personal Report of Communication Apprehension for College Students (PRCA-College), the Personal Report of Communication Apprehension for Tenth Graders (PRCA-Ten), the Personal Report of Communication Apprehension for Seventh Graders (PRCA-Seven), and the Personal Report of Public Speaking Apprehension (PRPSA). These instruments are shown in Tables 1-4. The procedures employed in their development and other pertinent information are discussed below.

PRCA-College. The PRCA-College instrument has received primary attention because of the need for this instrument in a continuing research program. An initial pool of 76 Likert-type items was generated. Thirty of these were taken intact from the Paul version of Gilkinson's PRCS instrument. The remaining items were written by graduate students in speech and me. These items focused on interpersonal communication (e.g., conversing with an acquaintance), small group communication (e.g., participation in a group discussion), and a few
This instrument is composed of 20 statements concerning feelings about communicating with other people. Indicate the degree to which the statements apply to you by marking whether you (1) strongly agree, (2) agree, (3) are undecided, (4) disagree, or (5) strongly disagree with each statement. Work quickly, just record your first impression.

1. While participating in a conversation with a new acquaintance I feel very nervous.
2. I have no fear of facing an audience.
3. I look forward to expressing my opinion at meetings.
4. I look forward to an opportunity to speak in public.
5. I find the prospect of speaking mildly pleasant.
6. When communicating, my posture feels strained and unnatural.
7. I am tense and nervous while participating in group discussions.
8. Although I talk fluently with friends I am at a loss for words on the platform.
9. My hands tremble when I try to handle objects on the platform.
10. I always avoid speaking in public if possible.
11. I feel that I am more fluent when talking to people than most other people are.
12. I am fearful and tense all the while I am speaking before a group of people.
13. My thoughts become confused and jumbled when I speak before an audience.
14. Although I am nervous just before getting up, I soon forget my fears and enjoy the experience.
15. Conversing with people who hold positions of authority causes me to be fearful and tense.
16. I dislike to use my body and voice expressively.
17. I feel relaxed and comfortable while speaking.
18. I feel self-conscious when I am called upon to answer a question or give an opinion in class.
19. I face the prospect of making a speech with complete confidence.
20. I would enjoy presenting a speech on a local television show.

Over a period of a year the instrument was administered to 1,434 college students at Michigan State University. Internal consistency reliability estimates (odd-even) ranged from .92 to .94. Test-retest reliability over a ten day period (N = 769) was .83.

The Test Anxiety Inventory\(^9\) was administered to 542 Michigan State students along with the PRCA-College. Although the scores on the two instruments were significantly correlated (.32), factor analysis with varimax rotation indicated that the items on the two measures loaded on separate factors. The analysis produced two factors, each of which accounted for about 35 per cent of the combined variance. All of the items of the PRCA-College instrument loaded on one factor, all of the items on the Test

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Anxiety Inventory loaded on the other factor. In a separate analysis of these data, not including the scores from the Test Anxiety Inventory, two factors were observed on the PRCA-College instrument. All of the items with their highest loading on the first factor were positively worded, all but one of the items on the second factor were negatively worded. On the basis of these results, I believe it is more defensible to conclude that the PRCA-College is unidimensional than that it is multidimensional.

The instrument subsequently was administered to 2,479 college students at Illinois State University. In the first administration at Illinois State (N = 1,121) ten additional items were added to the instrument to determine whether they would affect the results obtained. An analysis of the resulting data indicated that all but one of the original 20 items had a sufficiently high item-total correlation to be retained in the instrument. This item had a relatively low item-total correlation (.28), and although this correlation was significant at the .01 level it did not meet the preset .001 criterion. The item also was found (on the basis of a t-test between the 27 per cent of the students with the highest scores and the 27 per cent with the lowest scores) to be nondiscriminating. The observed difference was significant at the .05 level but not at the preset criterion of the .001 level. Although the item could have been retained without seriously harming the total instrument, it was discarded in favor of one of the new items which had an item-total correlation of .72 and met the criterion for discrimination. Figure 1 shows a frequency distribution of scores for the 2,479 Illinois State University students who have completed the instrument. The 1,484 Michigan State students are not included because they completed the instrument with the item that was subsequently discarded. The frequency distribution for the Michigan State students, however, is almost exactly the same as the one in Figure 1. The distribution is approximately normal. The

![Frequency Distribution of PRCA-College Scores for 2479 Illinois State University Students](image_url)
mean for the 2,479 ISU students is 60.45, the standard deviation is 11.58. The internal consistency (odd-even) reliability estimate is .93.

Factor analysis and varimax rotation of the data from the total Illinois State group again produced a two-factor solution. As was the case with the data from the Michigan State students, one factor was composed of positively worded items and the other was composed of negatively worded items. These two factors are comparable to the first two obtained by Friedrich in his analysis of the Gilkinson instrument. I do not believe, however, that these results properly can be interpreted as an indication of multi-dimensionality. Rather, I interpret these results (as well as those reported by Friedrich) to be indicative of two response patterns relating to item wording rather than item content.

Scoring this instrument in the usual 1-5 manner (1 indicating least apprehension, 5 indicating most) yields a potential range of scores from 20 to 100. The hypothetical neutral position in the instrument is 60.0. Determining what an individual score means is speculative at best. Any score higher than 60 suggests the presence of more than average apprehension. Exactly how much apprehension a person must have before he can be considered to have "abnormal" apprehension is another matter. Subjective observation of students who have been involved in our research program suggests that individuals with scores higher than 70 (approximately one standard deviation above the mean) are almost always highly anxious. Subjects scoring over 80 (approximately two standard deviations above the mean) can be described as severely apprehensive.

Determining the validity of any self-report measure is difficult, and the PRCA-College is no exception. An examination of the items included in the instrument and the procedures employed in the development of the instrument are suggestive, of course, of face validity. Determining validity on the basis of correlations of the PRCA-College with other measures was discounted because of the absence of other measures of high enough quality to serve as criterion variables. For example, observer ratings were discounted as a criterion variable because of both their unreliability and the impossibility of observing some of the behavioral syndromes which would be anticipated as a result of high communication apprehension, e.g. withdrawal. Similarly, physiological indicants were rejected because of the difficulty, if not impossibility, of creating comparable situations for measurement between the self-report and the physiological indicant. A crude, but suggestive, indicant of validity was provided by one instructor at Illinois State University. In this instructor's classes students were assigned to participate in group discussions in groups of six. The students then ranked themselves and the other members of their group in terms of their quality of participation. All of the highly-anxious students, according to the PRCA-College instrument, were ranked by the other members of their group either fifth or sixth, as would be expected.

In summary, the PRCA-College instrument is reliable and has some indication of validity. Because it employs the Likert approach to measurement, the data which it yields normally would be considered interval. It appears that this instrument is of sufficient quality to be employed in research on communication apprehension among college students.

PRCA-Ten. The PRCA-Ten was developed subsequent to the development of the college instrument. The college
instrument was taken as the base for PRCA-Ten. Some of the items were reworded to be more appropriate for individuals at this age level and ten items were added that appeared to be relevant to communication experiences of tenth graders. This instrument was administered to 123 tenth graders in the University High School in Normal, Illinois. The items selected for PRCA-Ten (see Table 2) included several that were not on the original college instrument. The basis for selection was item total correlations and t-tests of discrimination. The items selected all had item-total correlations of .50 or higher and discriminated beyond the .001 level. The internal reliability estimate (N = 123) for the 20 items selected for the measure was .88. No test-retest reliability estimate has yet been obtained.

**PRCA-Seven.** The development of the PRCA-Seven instrument followed the same procedure used for PRCA-Ten. The 30 items were administered to 72 seventh graders in Metcalf Junior High School, Normal, Illinois. Items selected for PRCA-Seven (see Table 3) were selected on the same basis as above. The internal reliability estimate (N = 72) for the 20 items selected for this measure was .87. No test-retest reliability estimate is as yet available.

### Table 2
**PRCA-Ten**

This instrument is composed of 20 statements regarding feelings about communicating with other people.

Indicate the degree to which the statements apply to you by marking whether you (1) strongly agree, (2) agree, (3) are undecided, (4) disagree, or (5) strongly disagree with each statement. Work quickly, just record your first impression.

1. While participating in a conversation with a new acquaintance I feel very nervous.
2. I seek out the opportunity to converse with other people.
3. When I talk with a member of the opposite sex who is near my own age, I feel quite nervous.
4. I have no fear of facing an audience.
5. I look forward to expressing my opinion at meetings.
6. I look forward to an opportunity to speak in public.
7. I enjoy meeting and talking with new people.
8. I am tense and nervous while participating in group discussions.
9. Although I talk fluently with friends I am at a loss for words on the platform.
10. My hands tremble when I try to handle objects on the platform.
11. I prefer not to talk with people unless I know them well.
12. I always avoid speaking in public if possible.
13. I feel that I am more fluent when talking to people than most other people are.
14. I am fearful and tense all the while I am speaking before a group of people.
15. My thoughts become confused and jumbled when I speak before an audience.
16. Although I am nervous just before getting up, I soon forget my fears and enjoy the experience.
17. Conversing with people who hold positions of authority causes me to be fearful and tense.
18. I feel relaxed and comfortable while speaking.
19. I face the prospect of making a speech with complete confidence.
20. I would enjoy presenting a speech on a local television show.

### Table 3
**PRCA-Seven**

This instrument is composed of 20 statements concerning feelings about communicating with other people.

Indicate the degree to which the statements apply to you by marking whether you (1) strongly agree, (2) agree, (3) are undecided, (4) disagree, or (5) strongly disagree with each statement. Work quickly, just record your first impression.

1. While participating in a conversation with a new acquaintance I feel very nervous.
2. Talking with people is one of my favorite pastimes.
3. I have no fear of facing an audience.
4. I look forward to expressing my opinion at meetings.
5. I look forward to an opportunity to speak in public.
6. I find the prospect of speaking mildly pleasant.
7. When communicating, my posture feels strained and unnatural.
8. I enjoy meeting and talking with new people.
9. I am tense and nervous while participating in group discussions.
10. Although I talk fluently with friends I am at a loss for words on the platform.
11. My hands tremble when I try to handle objects on the platform.
12. I prefer not to talk with people unless I know them well.
13. I always avoid speaking in public if possible.
14. I am fearful and tense all the while I am speaking before a group of people.
15. My thoughts become confused and jumbled when I speak before an audience.
16. Conversing with people who hold positions of authority causes me to be fearful and tense.
17. I feel relaxed and comfortable while speaking.
18. I enjoy preparing a talk.
19. I face the prospect of making a speech with complete confidence.
20. I would enjoy presenting a speech on a local television show.

PRPSA. The PRPSA was developed by substituting public speaking situations for test situations in an instrument used by Emery and Krumboltz to measure test anxiety. The test anxiety instrument has been used in a number of studies and found to be reliable. It is a Likert-type scale which, when scored in the usual 1-5 manner, yields scores with a potential range of 34 to 170. The hypothetical neutral position is 102. This instrument was selected as the base for the PRPSA because it provided an excellent variety of anxiety stimuli which could be revised to relate to public speaking. The original intent was to produce a shorter form of about 20 items selected from the original 34. However, item analysis and factor analysis (N = 769) indicated that all of the items were discriminating and all loaded on a single factor. Thus, the entire group of 34 items was retained in the instrument.

The PRPSA was administered to 945 students in a public speaking course at Michigan State University, and employed as a secondary measure in three

TABLE 4

<table>
<thead>
<tr>
<th>Statement</th>
<th>PRPSA</th>
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<tr>
<td>This instrument is composed of 34 statements concerning feelings about communicating with other people.</td>
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<tr>
<td>Indicate the degree to which the statements apply to you by marking whether you (1) strongly agree, (2) agree, (3) are undecided, (4) disagree, or (5) strongly disagree with each</td>
<td></td>
</tr>
</tbody>
</table>

11 Emery and Krumboltz.
Three separate internal reliability estimates for the measure were .94. A test-retest reliability estimate (N = 769) was .84 over a ten-day period. The mean score for the 945 subjects who have completed this instrument is 114.62. The standard deviation is 17.21. The shape of the frequency distribution of scores for these students is comparable to that for the PRCA-College (see Figure 1). However, the point of inflection of the frequency curve is substantially above the hypothetical neutral point. This may be taken to indicate either a bias in the instrument which produces scores indicating higher anxiety than would be expected, or that public speaking produces more anxiety than other communication transactions. The latter seems to be the more probable explanation.

The PRPSA was administered to 542 Michigan State University students along with the PRCA-College and the original Emory and Krumboltz Test Anxiety Inventory. The PRPSA and the PRCA-College measures were found to be significantly correlated (.41). The PRPSA and the Test Anxiety Inventory were also significantly correlated (.36) as were the PRCA-College and the Test Anxiety Inventory (.32). These significant correlations cannot be taken as indicators of concurrent validity because the measures are supposed to index different anxieties. Nor should they be interpreted as indicants of invalidity. Less than 20 per cent of the variance on one measure can be predicted from the score on another measure. This small amount of variance may represent a general anxiety level of an individual present in many situations, such as test taking, public speaking, communicating in small groups, walking alone in the woods, contemplating the likelihood of being drafted, and so forth.

The instruments reported above were designed to index communication apprehension reliability, quickly, and inexpensively. The PRCA-College and PRPSA have been used to screen students for research on the reduction of communication apprehension. The PRCA-College has also been used as a measure of communication apprehension in two studies of teaching methods in the basic course in speech. In every case results obtained for the instruments have been consistent with theoretical expectations. While these instruments have been satisfactory for the purposes for which they were designed, future users of the instruments (particularly PRCA-Ten and PRCA-Seven) should carefully evaluate the results they obtain to determine whether reliability and unidimensionality are maintained.


13 Nichols; Ertle.