

Student Work

2-1-1972

**An experimental comparison of several techniques for reducing
speech anxiety**

Mary Schatzman Aden

Follow this and additional works at: <https://digitalcommons.unomaha.edu/studentwork>

Recommended Citation

Aden, Mary Schatzman, "An experimental comparison of several techniques for reducing speech anxiety" (1972). *Student Work*. 3110.

<https://digitalcommons.unomaha.edu/studentwork/3110>

This Thesis is brought to you for free and open access by DigitalCommons@UNO. It has been accepted for inclusion in Student Work by an authorized administrator of DigitalCommons@UNO. For more information, please contact unodigitalcommons@unomaha.edu.

AN EXPERIMENTAL COMPARISON
OF SEVERAL TECHNIQUES FOR REDUCING SPEECH ANXIETY

A Thesis

Presented to the
Department of Speech
and the
Faculty of the Graduate College
University of Nebraska at Omaha

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by

Mary Schatzman Aden

February, 1972

UMI Number: EP74508

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI EP74508

Published by ProQuest LLC (2015). Copyright in the Dissertation held by the Author.

Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against unauthorized copying under Title 17, United States Code



ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

Accepted for the faculty of the Graduate College of the University of Nebraska at Omaha, in partial fulfillment of the requirements for the degree Master of Arts.

Graduate Committee

Clem C. Kessler Psychology
Name Department

Donald D. Manner Speech

John H. Britton Speech
Chairman

Acknowledgments

I wish to express my appreciation to the Department of Psychology for the use of their facilities during my experiment and especially to Dr. R. L. Wykoff for his assistance with the ANOVA 8 computer program.

I would also like to thank my sister-in-law, Jill Aden, for acting as my research assistant during the week of the experiment, and my husband for his moral support.

Table of Contents

	Page
Introduction	1
Survey of Literature	2
Statement of Problem	5
Hypotheses	6
Method and Procedure	6
Instruments and Materials	6
Subjects	7
Listeners	8
Procedure	8
Results	10
Discussion	11
References	13
Appendix I	
Personal Report of Communication Anxiety	17
Appendix II	
Validity and Reliability for PRCA Inventory	19
Appendix III	
Directions A	21
Directions B	22
Directions C	23
Directions D	24

Introduction

There has been much research done on stage fright, but unfortunately, little of it can be applied specifically to actions a speech teacher can take to solve the problem in the classroom. Stage fright, anxiety, or speech apprehension (terms used synonymously in this report) has been measured, observed, and found to be related to different aspects of personality and audience perception.

McCroskey(1966) and Paulson(1951) found that the basic speech course can increase students' self-confidence, but they do not indicate how this is accomplished. Paulson supported the theory that there is a transfer of confidence to later speaking situations.

Clevenger(1959) synthesized the speech textbook coverages of stage fright and discovered only vague, outdated and general methods of handling the problem. Most texts offer comforting messages concerning students' fear. Typically, Gilman, Aly and White in The Fundamentals of Speaking state: "stage fright is common," "stage fright can be overcome," "stage fright often disappears after the speaker begins,"(1966, pp. 241-242) etc. Also Barrett, in Practical Methods in Speech, states "most people experience fear in speaking. . .," "it is impossible to eradicate fear totally. . ." and "fear is largely hidden in the great majority of incidences. . .,"(1968, p. 62) etc. Most other texts have variations of these types of statements.

Very few specific approaches that a teacher could take have been studied. May(1950) theorized that a person is subjectively prepared to confront unavoidable anxiety constructively when he is convinced (consciously or unconsciously) that the values to be gained in moving ahead are greater than those to be gained by escape. Also, Lynch(1967) found evidence to support the theory that when a person experiences a more or less successful attack on his belief, he will change his opinion or reject the attack and return to his prior position. Direct verbal methods of attacking a student's attitudes toward speaking could be used by a teacher, but there is no evidence to indicate they would be successful. Robinson(1959) suggested emphasis on bodily control, message preparation and direct suggestion, but no evidence of efficacy has been presented.

Additional methods which have been used to reduce speech anxiety include group counseling, understanding and discussing the causes, suggestive relaxation, and Phillips' methods for reticents. Giffin and Bradley(1969) contend that group counseling can be effective, but they only provide a rationale for this approach; they do not report results of actually using it. Ewing(1946), on the other hand, compared individual versus group methods (traditional speeches versus discussions, forums, etc.) and found gains in confidence on all of his test measures for both approaches. Gilkinson(1943), Greenleaf(1947) and Low(1951) and others found that causes of speech anxiety include physical, mental, social, and psychological sources or combinations of

any of these. As in any other problem, understanding causes is the first step in the curative plan. Phillips(1968) investigated reticents whose speech anxiety is more deeply rooted than the average student's anxiety. His methods worked for these atypical students, but are often time consuming, and no measures of effectiveness were reported. He suggests contract-grading plans, individual criticism and goal setting that distinguishes the desirable from what is possible for the individual. Progressive or suggestive relaxation, a procedure during which ss try to relax muscle by muscle and simultaneously imagine themselves in an anxiety-causing situation, has worked effectively for Carhart(1943), Emery(1967), Jacobson(1946) and Paul(1966), but is the least likely to be applicable for the classroom teacher because of the facilities and space required.

Speech anxiety can be measured in several ways. Krause (1961) distinguished six ways to measure transitory anxiety: 1) introspective reports (psychological tests), 2) response to stress, 3) physiological signs, 4) clinical intuition, 5) free molar behaviors, and 6) task performing changes. Brutton(1950) used the physiological change measure. His procedure was based on a chemical reaction of palmar sweat and a tannic acid bearing agent. Eichler(1951) studied the Rorschach indices of anxiety. These are highly technical and individualized. Introspective measures were developed by Gilkinson(1943) and others. These self-reports were usually accompanied by reports of observers (Friedrich, 1970). Endler(1962) developed a stimulus-response

inventory which looks at the contributions of persons, situations, and responses to anxiety. Physical signs were studied by Dickens(1950). Kanfer(1958), Diehl(1959) and Lerga(1956) investigated behavior such as breaks, corrections, fragments, repetitions, procrastinations and intrusions.

A number of aspects of personality have been related to speech anxiety. Cow and Sheets(1951) studied the psychometric factors such as social adjustment, past speech experiences and activities involving self-expression as they are related to stage fright. Rose(1940) studied changes in personality as related to speech training, and Douglas(1948) studied the relations of feelings of personal security to effective public speaking.

Audience sensitivity (what a speaker feels toward an audience) seems to be a factor in speech anxiety. Pavio(1959) found a negative correlation between susceptibility to audience anxiety and frequency of reward for past experience in an experiment where Ss wrote stories about pictures of audience situations. Welke(1968) also suggests that speakers may prefer differing degrees of closeness or intentionality in attempting to reduce anxiety. Ss in this study increased their anxiety when speaking before a microphone, but over a period of time decreased anxiety when speaking before a microphone alone and a microphone plus a live audience.

In summary, the literature does not seem to offer adequate support for any specific approach that a classroom teacher can

take with a typical class of beginning speakers. Researchers have talked about the problem in general; they have identified causes and studied methods which reduce speech anxiety outside of the classroom and with specific groups or cases. They have shown how it can be measured and observed, and how it is related to aspects of personality and surrounding individuals. Thus, the existing literature provided groundwork for the present study, but did not deal with investigation of the effects of comforting messages.

Statement of the Problem. Many teachers of the basic course try techniques to minimize fear of speaking by the use of comments indicating that speech anxiety is a normal, natural experience which all speakers must endure. This technique will be called the "comforting message" approach. Others find that student's arguments in reply to these comforting comments outweigh such messages. Sometimes students do not believe these comments, or they do not believe they apply to themselves as individuals. It has been reported to the writer that some teachers realize that this type of situation will develop when the topic arises, so they ignore the entire issue or pass it off quickly in the most non-committal manner possible. The purpose of this study was to examine the effects on the degree of speech anxiety reported by Ss given different comforting messages and no such messages before a speaking situation.

Hypotheses.

- H₁ Anxious Ss who read a comforting message stating that anxiety is normal will manifest a greater reduction in speech anxiety than those who do not read such a message.
- H₂ Anxious Ss who read a comforting message stating that the audience shares their anxiety will manifest a greater reduction in speech anxiety than those who do not read such a message.
- H₃ Anxious Ss who read both types of comforting messages will manifest a greater reduction in speech anxiety than those who read only one or neither of the messages.

Methods and Procedures

Instruments and Materials. McCroskey's (1970) measure of Communication-bound anxiety (PRCA-college) was used as a pre- and post-measure (see Appendix I). It consists of 30 statements which were checked on a 1 - 5 scale ranging from "strongly agree" to "strongly disagree" with 3 being "undecided." Approximately two months prior to the experiment all of the basic speech students at the University of Nebraska at Omaha were given this questionnaire. The same measure was again given to the Ss immediately after they spoke in the experiment with the directions that they were to rate the statements in

accordance with their feelings at that moment. It was assumed that they would recognize the instrument, but not recall their previous answers.

Ss received one of four sets of directions (see Appendix II) which were identical except for two comforting messages as in Appendix II-A, one comforting message as in Appendix II-B and C, and no comforting messages as in Appendix II-D. The experiment took place in a small discussion room which had a two-way mirror and adjoined a small observation room. The sound system was not in operation, so the actual speeches given by the Ss could not be heard by the researcher (referred to as "monitor" throughout the procedure).

Subjects. The scores of the Speech 101 students at the University of Nebraska at Omaha formed a curve almost identical to that of McCroskey(1970) at Michigan with scores ranging from approximately 23 to 93. The 100 students who participated in this experiment all ranked above 70. They were randomly assigned in blocks of four to the four treatments. The highest four were assigned, one to each treatment, then the next highest four, and so on. This method reduced the degrees of freedom, but insured that changes would be a result of the experimental conditions rather than pre-existing differences in the measured anxiety.

Members of the researcher's own class were not included because of the possibility of biased answers, but they were

given the opportunity to act as audience members or listeners for the Ss.

Listeners. The audience consisted of a panel of from three to five male and female students who seemed to be of average age and appearance for the students at U.N.O. in the opinion of the researcher. They were instructed to look attentive at all times while the Ss spoke to them, but to give only non-verbal, non-committal feedback. They were cautioned against deep frowns, loud laughs, head nodding, etc. and were told to give mild non-verbal feedback so that the Ss would not feel they were talking to an abnormal group. The researcher watched the panel's reactions and if any reaction which may have changed the Ss' anxiety was noticed, the panel member was made aware of it and asked to eliminate that feedback for future Ss. There was only one occurrence when deep concentration appeared as a frown.

Procedure. Each S was notified through his speech teacher that he had been selected to participate in speech research, and given the time and place to which he was to report. Time was based on the availability he had indicated on the pre-test. Credit arrangements were left to the individual instructors. The experiment was run during one week from 8:00 to 5:00 whenever the room was available. A night or two previous to their scheduled appearance, Ss were phoned and reminded of their appointment. When they arrived, their names were checked off the schedule; then they were asked to remove their coats and

put down their books. Next they were told to sit in seat "A", "B", "C" or "D" which corresponded to the treatment they had been assigned to, and to read the directions which they found there. They were instructed to signal the research assistant, a person other than the monitor, when they finished so that she could time them from that time on. They were then given five minutes to prepare to tell the audience why they chose U.N.O. as their college. The topic was chosen for its simplicity and emotional neutrality. A sketchy outline was provided for their use if they so desired. It listed ideas such as "academic," "financial," "social," etc. From this room Ss could see the panel of listeners through the mirror; they could see also from the arrangement of the room that their backs would be toward the mirror while speaking. When they finished their preparation, the research assistant led them into the other room and explained how she would indicate the amount of time they had remaining of the two minutes they were given. She asked if they had any questions--most did not, but some asked if they had to talk for the full two minutes. She simply repeated that they had been given two minutes. The time was indicated on five cards showing half-minutes intervals and a "STOP". When they finished speaking, they were reminded to fill out the questionnaire and address an envelope to themselves if they wanted an explanation of the study. When they returned to the observation room, they were thanked for participating in the study.

Results

An analysis of variance for difference scores between the pre- and post-tests was computed on a National Cash Register 315 computer using the ANOVA 8 program for random block designs prepared by R. L. Wykoff of the University of Nebraska at Omaha. The means, variances and standard deviations are shown in Table I. Table II indicates the results of an analysis of variance for the difference scores.

Table I

Means, Variances and Standard Deviations for Difference Scores

Group	A	B	C	D
Means	-2.880	-2.80	-1.760	-4.320
Variances	45.943	53.627	64.857	80.060
Std. Deviations	6.778	7.323	8.053	8.948

Table II

Analysis of Variance for Difference Scores
Among Comforting Message Conditions

Source	df.	SS	MS	F
Treatments	3	91.71	30.57	0.50
Error	96	5867.68	61.12	
Total	99	5959.39		

The F ratio of .50 was not significant at the .05 criterion level, so the null hypotheses were accepted.

Although all four groups of Ss reduced their anxiety, the group which received both comforting messages reduced less than those which received only one. The most important finding was that the group which received no message about stage fright reduced almost twice as much as the others. These changes are consistent in their direction even though the F ratios for difference scores were not significant statistically.

Discussion

Although none of the research hypotheses was accepted, the fact that the group which received no mention of stage fright or anxiety reduced so much needs to be discussed. Psychologists and students of persuasion accept the fact that attention can be focused on a concept in many ways; teachers of the basic speech course seem to agree with this theory.

Telling a student that stage fright is normal may call attention to his anxiety and may evoke his previous responses to it. Presenting this idea which conflicts with his previous experience could cause even more discomfort until he resolves such conflicting concepts.

The same teachers who agree that discussing stage fright may do harm to some students, also admit that they repeatedly offer "comforting" remarks to their students semester after semester.

It has never been proved that offering comforting comments would reduce anxiety and the results of this experiment indicate that the opposite may be true. The fact that all four experimental groups reduced their anxiety to some extent could be attributed to their having made several speeches in class since they took the pre-test; McCroskey and Paulson have already found this to be possible. This type of experiment needs to be repeated with other types of students to determine if this is true for Ss not enrolled in a speech class during the time of the experiment.

Although face validity seems high for the instrument of measurement used, only one suggestive indicant of external validity has been obtained. The same is true for most introspective measures, so before future use heart beat, pulse or some other such measurement needs to be correlated to the PRCA inventory.

Future studies are necessary to develop methods which speech teachers could use to avoid class discussions of the topic of anxiety, to avoid comforting comments to individual anxiety-ridden students, and to form more constructive approaches to speaking publicly. Attention to this approach needs to be made because of the introduction of video and audio tape recorders as teaching instruments, as these instruments seem to cause more anxiety than other methods.

References

- Barrett, H. Practical Methods in Speech. New York: Holt, Rinehart and Winston, 1968.
- Carhart, R. An experimental evaluation of suggestive relaxation. Speech Monographs, 1943, 10, 29-40.
- Clevenger, T. A synthesis of experimental research in stage fright. Quarterly Journal of Speech, 1959, 45, 134-145.
- Cow, G. M., & Sheets, B. V. The relation of psychometric factors to stage fright. Speech Monographs, 1951, 18, 266-271.
- Dickens, M., Gibson, F. & Prall, C. An experimental study of the overt manifestations of stage fright. Speech Monographs, 1950, 17, 37-47.
- Diehl, C. F., White, R. & Burk, K. W. Voice quality and anxiety. Journal of Speech and Hearing Research, 1959, 2, 282-285.
- Douglas, R. L. The relations of feelings of personal security to effective public speaking. Speech Monographs, 1948, 15, 244 (abstract).
- Eichler, R. M. Experimental stress and alledged Rorschach indices of anxiety. Journal of Abnormal and Social Psychology, 1951, 46, 344-355.
- Emery, J. R., & Krumboltz, J. D. Standard versus individualized hierarchies in desensitization to reduce test anxiety. Journal of Counseling Psychology, 1967, 14, 204-209.
- Endler, H. S., Hunt, J. & Rosenstein, A. J. An S-R inventory of anxiousness. Psychological Monographs, 1962 (17, No. 536).
- Ewing, W. H. An evaluation of the individual versus group speaking methods of teaching the beginning college speech course. Speech Monographs, 1946, 11, 80-85.
- Friedrich, G. W. An empirical explication of a concept of self-reported speech anxiety. Speech Monographs, 1970, 67-72.
- Giffin, K., & Bradley, K. Group counseling for speech anxiety: an approach and a rationale. Journal of Communication, 1969, 19, 22-29.

- Gilkinson, H. A questionnaire study of the causes of social fears among college speech students. Speech Monographs, 1943, 10, 74-82.
- Gilman, W. E., Aly, B. & While, H. The Fundamentals of Speaking. New York: Macmillan Co., 1966.
- Greenleaf, F. I. An Exploratory Study of Social Speech Fright. M. A. Thesis, State University of Iowa, 1947.
- Jacobson, E. Progressive Relaxation. Chicago: University of Chicago Press, 1945.
- Kanfer, F. H. "Supplementary Report," Journal of Experimental Psychology, 1958, 56, 73-80.
- Krause, M. S. Anxiety in verbal behavior. Journal of Counseling Psychology, 1961, 25, 414-419.
- Lerga, L. A preliminary study of the verbal behavior of stage fright. Speech Monographs, 1956, 23, 229-233.
- Low, G. J. & Sheets, B. The relation of psychometric factors to stage fright. Speech Monographs, 1951, 18, 266-281.
- Lynch, M. D. Avenues for reducing tension produced by attack on belief. Journalism Quarterly, Summer, 1967, 267-270.
- May, R. The Meaning of Anxiety. New York: Ronald Press Co. 1950.
- McCroskey, J. The effect of the basic speech course on students' attitudes. Speech Teacher, 1966, 16, 115-117.
- McCroskey, J. Measures of communication-bound anxiety. Speech Monographs, 1970, 37, 269-277.
- Paivio, A. & Lambert, W. E. Measures and correlates of audience anxiety (stage fright). Journal of Personality, 1959, 27, 1-17.
- Paul, G. L. Insight versus Desensitization in Psychotherapy. Stanford: Stanford University Press, 1966.
- Paulson, S. F. Changes in confidence during a period of speech training: transfer of training and comparison of improved and non-improved groups on the bell adjustment inventory. Speech Monographs, 1951, 18, 260-265.
- Phillips, G. Reticence: pathology of the normal speaker. Speech Monographs, 1968, 35, 39-49.

- Robinson, E. R. What can a speech teacher do about stage fright? Speech Teacher, 1959, 8, 8-14.
- Rose, F. A. Training in speech and changes in personality. Quarterly Journal of Speech, 1940, 26, 193-196.
- Welke, J. W. The effects of intensional and extensional audiences on communication anxiety. Central States Speech Journal, 1968, 19, 14-18.

Appendix I

PRCA - College

(Personal Report of Communication Apprehension - College)

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.
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 my 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.

Appendix II

Validity and Reliability of the PRCA - College

Regarding Reliability, McCroskey(1970) reports that the mean for the 2,479 Illinois State University students is 60.45, the standard deviation is 11.58, and the internal consistency (odd-even) reliability estimate is .93. 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.

An examination of the items included in the instrument and the procedures used in developing the instrument are suggestive 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. Observer ratings were discounted because of both their unreliability and the impossibility of observing some of the behavioral syndromes. Physiological indicants were rejected because of the difficulty of creating comparable situations for measurement between the self-report and the physiological indicant. An indicant of validity was provided at Illinois State University by an instructor whose students were assigned to participate in group discussions in groups of six. The students ranked themselves and 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.

Appendix III

- Directions A - containing two comforting messages, one about anxiety being normal and one about the audience sharing anxiety.
- Directions B - containing one comforting message about the audience sharing anxiety.
- Directions C - containing one comforting message about anxiety being normal.
- Directions D - containing no message concerning anxiety.

A

DIRECTIONS

Read this message completely before you do anything.

You will be asked to talk about why you chose U.N.C. as your college to a small audience in the next room for about two minutes. An outline has been prepared for you to use. You need not talk about all of the items, only the ones you feel are appropriate for you. You may jot down as many notes as you feel necessary on the paper provided and take them with you.

The audience consists of other students who are here to listen to you, not to evaluate you. They would probably be as nervous as you if they were in your position. Tension is a natural feeling when a situation like this arises, so don't worry about it.

The monitor will be watching their reactions to you--you will be standing at the speaker's stand with your back to the mirror.

Please fill out a questionnaire at the rear table before you leave, and address an envelope to yourself if you would like a report of this study.

Please do not discuss this research until after you receive the results.

~~You have~~ five minutes to prepare, starting now.

B

DIRECTIONS

Read this message completely before you do anything.

You will be asked to talk about why you chose U.N.O. as your college to a small audience in the next room for about two minutes. An outline has been prepared for you to use. You need not talk about all of the items, only the ones you feel are appropriate for you. You may jot down as many notes as you feel necessary on the paper provided and take them with you.

The audience consists of other students who are here to listen to you, not to evaluate you. They would probably be as nervous as you if they were in your position.

The monitor will be watching their reactions to you--you will be standing at the speaker's stand with your back to the mirror.

Please fill out a questionnaire at the rear table before you leave, and address an envelope to your self if you would like a report of this study.

Please do not discuss this research until after you receive the results.

You have five minutes to prepare starting now.

C

DIRECTIONS

Read this message completely before you do anything.

You will be asked to talk about why you chose U.N.O. as your college to a small audience in the next room for about two minutes. An outline has been prepared for you to use. You need not talk about all of the items, only the ones you feel are appropriate for you. You may jot down as many notes as you feel necessary on the paper provided and take them with you.

The audience consists of other students who are here to listen to you, not to evaluate you. Tension is a natural feeling when a situation like this arises, so don't worry about it.

The monitor will be watching their reactions to you--you will be standing at the speaker's stand with your back to the mirror.

Please fill out a questionnaire at the rear table before you leave, and address an envelope to yourself if you would like a report of this study.

Please do not discuss this research until after you receive the results.

You have five minutes to prepare, starting now.

D

DIRECTIONS

Read this message completely before you do anything.

You will be asked to talk about why you chose U.N.O. as your college to a small audience in the next room for about two minutes. An outline has been prepared for you to use. You need not talk about all of the items, only the ones you feel are appropriate for you. You may jot down as many notes as you feel are necessary on the paper provided and take them with you.

The audience consists of other students who are here to listen to you, not to evaluate you.

The monitor will be watching their reactions to you--you will be standing at the speaker's stand with your back to the mirror.

Please fill out a questionnaire at the rear table before you leave, and address an envelope to yourself if you would like a report of this study.

Please do not discuss this research until after you receive the results.

You have five minutes to prepare starting now.