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A Study of the Efficacy of Two Educational Methods in the Reduction of Computer Fear

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By

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Abstract

The purpose of this study was to examine the efficacy of two different educational methods in the reduction of computer fear. One of the methods focused on the effectiveness of a quasi-hypnotic session in the reduction of computer fear.

An open-ended sentence completion questionnaire was given to 46 employees of Pittsburg State University in conjunction with an in-service training seminar on computers. The data were analyzed according to Wilcoxon Matched Pairs Signed Ranks tests and Spearman Rho correlations.

Results of this study indicate that an educational presentation is not as effective as an educational presentation paired with relaxation training in the reduction of computer fear. It also indicates that the latter method is more effective in fostering a subject's interest and increasing his/her confidence.

Suggestions for future research are also discussed.

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CHAPTER 1

In the last two decades there has occurred, throughout the world, an increase in technology such as we have never known before. At the front of this technological movement is cybernetics, the science which deals with the processes of automation and computer control and their interaction with people. Computers are now being used in every possible way in the workplace and at home. Most people take for granted their manual methods and procedures for doing work, which, not surprisingly, makes a computer system perceptually overwhelming and leads to fear and resistance. It has thus become important for people who have no previous experience to become familiar with computer usage. No matter how non-technical a person's job seems, there will come a time when computer technology will be incorporated into the previously non-technical job. When this occurs the worker will find himself in the computer age complete with video terminal, keyboard, and little blinking lights. How a person responds to this is likely to affect his career and his piece of mind. Some of the most critical factors in computer implementation are related to personal acceptance of the computer by office personnel as a working tool. Without this acceptance, it can be extremely difficult to make even the fastest and most ingenious companies function productively.

Computer users have always been defined in terms of what they are not: computer professionals. That definition gets tricky, though, when you find general managers, clerks, accountants, and even executives writing programs and drawing up data models for their enterprises.

There is no such thing as a "typical" computer user or end user as one would be termed in the jargon. Catherine Marenghi (1983), senior editor of Computer World, sees end users reacting to automation on three levels.

The first level is characterized by enthusiasm and overwhelming acceptance of personal computing technology and automation. "Given the opportunity to use reasonable friendly technology, some percentage of office workers will respond very positively - in fact, they will get overly involved and waste time writing programs that already exist," Harenghi explains.

In the second level, users will simply discover that the technology does what they want it to do and casually accept it. But, only "if it is easy to use, useful and introduced carefully," she continued. In contrast to the other two groups, however, the third group consists of "a substantial - but decreasing - number who want nothing to do with it (automation), either because it is bad technology or badly introduced or not useful for the amount of training required to learn it." Titus (1983) discusses a condition called terminal shock identified by David V. Cossey, director of the Wharton Computer Center at the University of Pennsylvania. Working with a population of MBA students, Cossey speculates that this problem might stem from strong pressures on these students to use computers effectively and the conflicting personal feelings of not being able to control the machine.

If graduate business students and corporate managers find such discomfort with the computer, imagine the anxiety an office clerk or secretary might experience when faced with a new office computer.

Need for the Study

While office workers and others may not openly express fear, resentment, and hostility toward a new computer, they may transfer these feelings to the machine with disastrous results. These unresolved feelings may be reflected in a host of problems that crop up when a computer system is implemented and, according to Titus (1983), may appear in the form of unusually long periods of operational startup, high error rates on entries and processing, actual slowdown of entry operations, and even sabatage of data and/or equipment. These factors drastically affect production and employee satisfaction. For a variety of reasons, it may be more practical and economical to reeducate existing staff than to replace them. Classes or in-house training programs for computerphobics are being experimented with at the present time as an answer to this problem.

Most of these training sessions, as discussed by Gross (1983), are conducted with an educational focus directed towards training the employee to become more efficient at computer applications. This increased efficiency reinforces positive feelings toward the computer and lessens his negative, anxious feelings. As a means of overcoming employee resistance, training program personnel might become aware of the potential effectiveness of relaxation techniques integrated with a computer education program. The utility of this study may directly benefit those who find as their job the responsibility of maintaining a training program which develops their employees' ability to function as productive and effective computer users.

Statement of the Problem

The purpose was to determine if an educational presentation paired

with relaxation exercises is more effective than an educational presentation alone in reducing the anxiety of subjects who exhibit fear of the computer.

Definition of Critical Terms

In order to avoid ambiguitiescir misinterpre.tation"the f,allowing will serve as operational definitions:

1. Anxiety. a) Painful or apprehensive uneasiness of mind usually over an impending 'or anticipated ill. b) Fearful concern or interest. c) An abnormal and overwhelming sense of apprehension and fear often marked by physiological signs (as sweating, tension, and increased pulse), by doubt concerning the reality and nature af the threat, and by self-doubt about one's capacity to cope with it.

2. Computer. Any of various machines equipped with keyboards, electronic and electrical circuits, storage units, and recording devices for the high-speed performance of mathematical and logical operations, or for the processing of coded information.

3. Confidence. a) A feeling or consciousness of one's powers or of reliance on one's circumstances. b) The quality or state of being certain.

4. Cyberphobia. A morbid, irrational fear of computers.

5. Expectation. The act or state of expecting, or looking forward to.

6. Hypnosis. A trancelike condition that can be artificially induced, characterized by an altered state of consciousness, diminished willpower, and an increased responsiveness to s.uggestion.

7. Interest. a) Readiness to be concerned with or moved by an object or class of objects. b) The quality in a thing that arouses interest.

8. Phobia. A morbid, irrational dread of anything.

Hypotheses

The objective of this study was to determine what relationship exists between educational presentations on computers, relaxation techniques, and fear of computers. Specific hypotheses to be statistically tested were as follows:

1. There is no significant difference between ratings of a subject's confidence level as measured by the Sheverbush-Gordon Computer Reaction Report (SGCRR) before and after a subject attends a workshop on computers.

2. There is no significant difference between ratings of a subject's anxiety level as measured by the SGCRR before and after a subject attends a workshop on computers.

3. There is no significant difference between ratings of a subject's expectation level as measured by the SGCRR before and after a subject attends a workshop on computers.

4. There is no significant difference between ratings of a subject's interest level as measured by the SGCRR before and after a subject attends a workshop on computers.

5. There is no significant difference between ratings of a subject's confidence level as measured by the SGCRR before and after a subject attends a workshop on computers which includes a relaxation training session.

6. There is no significant difference between ratings of a subject's

anxiety level as measured by the SGCRR before and after a subject attends a workshop on computers which includes a relaxation training session.

7. There is no significant difference between ratings of a subject's expectation level as measured by the SGCRR before and after a subject attends a workshop on computers which includes a relaxation training session.

8. There is no significant difference between ratings of a subject's interest level as measured by the SGCRR before and after a subject attends a workshop on computers which includes a relaxation training session.

9. There is no significant difference between ratings of a subject's confidence level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University.

10. There is no significant difference between ratings of a subject's anxiety level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University.

11. There is no significant difference between ratings of the subject's expectation level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University.

12. There is no significant difference between ratings of a subject's interest level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University.

Delimitations

The study confined itself to a comparison of the effectiveness of an educational presentation paired with relaxation versus an educational presentation alone in the reduction of cyberphobia. Subjects were restricted to 46 individuals, employees of Pittsburg State University, who self-selected to attend an inservice training session dealing with fear of computers. The study was done in March of 1983.

Limitations

1. The sample is limited to employees of Pittsburg State University who consented to participate as subjects in this experiment. Differences may be found if subjects from different areas are included.

2. The tour of the Pittsburg State University Computer Center given to the control group is a standardized tour given to all employees of the University and as such does not constitute a separate treatment method with this sample.

3. The Hawthorne Effect may have to be taken into account. Knowing that they are in a group whose purpose is to reduce cyberphobia may in itself change the subject's level of anxiety toward the computer.

Chapter II

Review of Literature

The electronics era is changing the way we work and redefining the way we learn to work. At first glance, modern technology appears to be the panacea to our productivity problems. After all, new systems are designed to produce more in less time. Too often productivity declines because the human interface and other contingencies are not considered. Personnel malaise, such as worker anxiety over displacement by automation, is a prime cause of loss of productivity.

In the last several years there has been increasing concern in the popular literature about the topic of cyberphobia.

According to Norton (1982), few people over the age of 30 have received a practical education in the use of the computer within their formal schooling. There are an estimated 1.2 million computers in operation in the U. S. and by 1985 there will be 5.4 million, or one computer for every 42 people. Four million of these units will be desk-top computers for use by untrained laymen.

Paul (1982) writes in Computerworld that at least 30% of the business community that deals with computers on a daily basis experiences some degree of cyberphobia. Very often this 30% are people who opted for nontechnical jobs and who find themselves unwittingly thrust into an automated environment. Fear of computers is a phobia, according to Paul, when it keeps people from functioning normally. The sufferers experience the same symptoms as those suffering from other phobias - nausea, sweaty palms, and high blood pressure.

H. Poppel (1982), Vice-president of Booz, Allen, and Hamilton, Inc., a

management consulting company, reports findings from a study on office automation. Booz-Allen's study indicates that approximately one-third of all professionals and executives will be wary of the computer terminal rather than receptive to it. Most of them eventually come around, but about one in ten refuse. This 10% can certainly be considered cyberphobes, people with an irrational fear of the computer. The Booz-Allen study presents some factors which influence cyberphobia. For many professionals the most critical factor is tenure with the company. A manager who has spent 25 years with a company is far more likely to resist using computers than a person of the same age who has recently changed jobs.

Age is also a factor. Many executives in their late fifties just do not consider computers a part of their work ethic. Booz-Allen also refers to the fear of sitting down at the terminal. People worry that they will look stupid, that they can not master the techniques. Much of this stems from a feeling the person has that in some way they are losing control. Educational level does not seem to be a critical factor in cyberphobia. What is more significant is if you have ever learned to type. Your attitude toward the typewriter and your skill at using it appear to predict whether you will approach the terminal's keyboard as a friend or an enemy. A last factor listed by Booz-Allen is a crucial one. With everything directly available via computer, does the top man really need ranks of executive assistants? This brings up a very fundamental issue. People are scared of losing their jobs.

Raub (1981) examined three related features of computer anxiety in college students: 1) What attitudes and beliefs do students have about computers that cause them to feel axnious? 2) What are some of the correlates of computer anxiety? 3) To what extent does hands-on computer experience

reduce computer fears? Reduction of computer fears was examined by comparing changes in computer attitudes over a semester among two introductory computer programming classes and one introductory psychology class (N = 50). A regression analysis found five independent variables to be significant contributors to computer anxiety: gender, level of computer experience, college major, math anxiety, and trait anxiety. The repeated-measures analysis of variance found that the programming courses reduced computer usage anxiety; however, the courses did not decrease students' fear regarding the computer's negative impact on society, nor did they increase students' appreciation of computer technology. Interviews suggested that a pre-programming course emphasizing computer usage and computer applications to actual work situations would facilitate the learning of abstract programming concepts. This study concluded that computer anxiety comprises a heterogeneous set of fears which evolve along an assimilation/accomodation continuum.

Leherissey (1971) investigated the hypothesis that stimulating state epistemic curiosity within a complex Computer-Assisted Instruction (CAI) task would reduce state anxiety and improve performance. Subjects were assigned to Curiosity-Stimulating Instruction (CSI) or No Instruction (NI) conditions within a Reading (R) or Constructed Response (CR) program version. As predicted, a) high state curious students had lower levels of state anxiety and performed better than low state curious students; and b) high trait curious students had higher state curiosity scores than low trait curious students.

The hypothesis that students in the CSI condition would perform better than students in the NI condition was partially supported in that high state anxious students in the CSI condition performed better than

high state anxious students in the Nl condition, whereas there was little difference in the performance of low state anxious students in these conditions. Contrary to predictions, neither state anxiety nor state curiosity differed for students in the CSl and NI conditions. Regardless of instruction conditions, initially high curiosity declined throughout the CAl task. However, the CR groups had a greater decline in state curiosity and increase in state anxiety than the R groups. In addition, only high trait curious and low trait anxious students in the R groups maintained their initial high levels of state curiosity and low levels of state anxiety, respectively, throughout the CAl task.

Wajda (1974) examined the relationship between a systematized computer-managed program of instruction and a non-computer-managed program of instruction on students' anxiety and self-esteem. A four-way analysis of variance and examination of the means revealed the following: 1) Students in the computer-managed program had more general anxiety than students in the non-computer-managed program: 2) Female and male students in the computer-managed program had more general anxiety than students in the non-computer-managed program, respectively; 3) Minority students in the non-computer-managed program had higher general anxiety scores than minority students in the computer-managed program; 4) Students in the computer-managed-program had higher test anxiety scores than students in the non-computer-managed program in all grades, except grade eight, where the reverse was true; 5) In grades four through seven, students in the non-computer-managed program had higher self-esteem scores, but in grade eight, students in the computer-managed program had higher self-esteem scores.

Shelton (1979) examined the influence of anxiety, among other factors,

on Computer-Assisted Learning. He found, as did Leherissey, that neither state nor trait anxiety scores were significantly related to the measures of programmed learning. Shelton concludes that anxiety may have an indirect influence on programmed instruction.

Hinchcliff (1982) performed a comparative analysis of computer-assisted, audio-taped, and "in vivo" systematic desensitization for the treatment of communication apprehension. The "in vivo" treatment was proved to be effective and comparable in effect to the computer-assisted treatment.

O'Neil (1969) tested hypotheses about the effects of anxiety on Computer-Assisted Learning derived from Spence-Taylor Drive Theory and Spielberger's Trait-State Anxiety Theory. Stress was induced by feedback concerning performance on a mathematical learning task which was presented via computer. High trait anxiety subjects in the stress condition showed a significantly greater initial increase in state anxiety from pretask levels than did the low trait anxiety subjects. In the non-stress condition, the changes in state anxiety for high and low anxiety groups were quite similar. Both groups showed almost the same increase in state anxiety from pretask levels and approximately parallel changes in the level of state anxiety during the learning task. There was no relationship between trait anxiety and errors on the CAl learning task. In contrast, subjects with high levels of state anxiety made more errors than low state anxiety subjects throughout the learning task.

Fabrey (1982) explored differences in state anxiety experienced with or without the benefit of using a simple calculator to solve easy or difficult statistics problems. Superior performance in terms of both accuracy and time due to the use of a simple calculator was found, as expected.

By far the highest anxiety was experienced by subjects solving difficult problems by hand. There appears to be clear evidence that even a very basic calculator can allow students to solve statistics problems more quickly and accurately. In addition, students using calculators work with less anxiety about the problem solving situation, particularly as problem difficulty increases.

Katz and Dalby (1981) compared computer-assisted and traditional psychological assessment of elementary school-aged children. Forty gifted children and forty behavior problem children were administered the State Anxiety and FIRO-BC personality inventories. Half of each group were tested using a computer terminal while the others were given standard written forms of the tests. All children were retested at a mean interval of one week using the same procedures. Examination of mean changes from first to second testing sessions showed that there was a significant increase in mean positive attitudes toward computers, a significant decrease in state anxiety, and that it took significantly less time to administer and score the inventories the second time. Children who received the computerized tests significantly increased their mean positive perceptions of computers while the perceptions of children using the traditional method did not change appreciably.

Cyberphobia and computer anxiety is a problem of increasing concern and there exists a need for programs to help people deal with these fears. Reduction of fear would enable them to effectively make use of computers. Treatment of phobia has been traditionally accomplished primarily by psychotherapy, behavioristic therapy and hypnosis. Psychotherapy, however, is a lengthy affair and not practical for some people. Behavioristic therapy and hypnosis offer a less time consuming and less expensive alternative.

Frankel (1981) demonstrated that when hypnosis is used in conjunction with techniques aimed at replacing anxiety with relaxation, the therapeutic gains appear to be enhanced. Some patients in describing phobic symptoms have also used phraseology not unlike that used by subjects who have had intense hypnotic experiences. Frankel (1981) shows that the essence of the phobic experience is not unlike that of the event of hypnosis, and that, perhaps, the phobic experience is in large measure a spontaneously occurring trance or dissociative experience similar to a hypnotic induction procedure. If this is true, phobic patients should be more hypnotizeable than others.

Frankel and Orne (1976) demonstrated this fact by comparing the hypnotizability scores of a series of 24 phobic patients with those of an equal number of smokers who applied for treatment in hypnosis to relinquish the habit. Subjects were tested for hypnotizability either on the Stanford Hypnotic Susceptibility Scale (SRSS) or the Harvard Group Scale (RGS). The mean score of the phobic group was 8.08 on a l2-point scale. The mean of the smokers was 6.08. The difference was significant beyond the 0.01 level (two-tailed). It was found that 30% of the smokers were nonresponsive to hypnosis. This figure represents the percentage of nonresponders in any randomly chosen group of people, Rilgard (1965). Quite striking is the finding that not a single phobic patient of the 24 examined for hypnotizability was unresponsive as opposed to the above mentioned 30% of the control group. It was also noted that individuals with multiple phobias were significantly more hypnotizable than individuals with a single phobia.

Marks, Gelder and Edwards (1968) did a controlled prospective trial in which they compared the effectiveness of hypnosis and desensitization,

i.e., the pairing of the graded phobic stimuli with relaxation. Patients were selected as they presented for out-patient treatment with phobias as their main complaint. They were allocated to form two equal groups; one received systematic desensitization, the other hypnosis. Patients were treated individually. They were rated before and after twelve weekly sessions of treatment. By the end of treatment the desensitization group had improved significantly with a score of .96 on the five point scale used. The hypnosis group improved less significantly with a rating of .70. Marks, Gelder, and Edwards (1968) felt that in practical terms the desensitization patients were rather less likely to avoid phobic situations and experienced slightly less anxiety when they entered those situations.

In a comparable study, Lang et al, (1965) studied student volunteers who had simple phobias of snakes. They recorded subjective ratings of anxiety on a ten-point scale before and after eleven sessions of desensitization. Their desensitization subjects reported a mean decrease of 2.1 points in phobic anxiety, while hypnosis subjects reported a decrease of 1.2 points. These findings closely resembled the Marks, Gelder, and Edwards (1968) findings. Both Marks, Gelder, and Edwards (1968) and Lang et ale (1965) found 'that scores on the Stanford Hypnotic Suggestibility Scale had a low correlation with improvement in this hypnosis group. The former found $r = .34$, $p < .01$, the latter a slightly lower $r = .29$, $p < .05$. The correlation was even smaller in both desensitization groups.

Cautela (1966_a) presented the possibility that successful treatment of phobias can be explained in terms of desensitization principles. He argued that two components present in desensitization procedures are also present in the hypnotic induction procedure: instructions to the subject

to close his eyes and suggestions of relaxation. In a later paper, Cautela (1966_b) puts forth the idea that hypnoanalysis many times will involve exposure in imagination to the phobic object or situation while the patient is relaxed. He states that there is one essential difference between this and systematic desensitization based on relaxation. In desensitization, a heirarchy is carefully constructed concerning the patient's anxiety responses to various aspects of the phobic object or situation. The patient is very gradually exposed to the phobic stimulus while relaxed. In hypnoanalysis, the patient is randomly exposed to the phobic object. Sometimes there will be a strong anxiety reaction and sometimes it will be minimal. The hypnoanalytic procedure, according to Cautela (1966_b), will require many more sessions for a remission of the phobic sYmptoms, since sometimes the anxiety responses will be extinguished (counterconditioned) and sometimes they will be reinforced.

At this point there follows a review of the rationale for the projective sentence completion type questionaire used in the current study. Frank (1948) characterizes projective techniques as follows:

"The essential feature of a projective technique is that it evokes from the subject what is in various ways expressive of his 'private world' and personality process." (p. 47, Frank's italics).

The "private world" referred to by Frank is one which is created by the individual himself as a result of his special experiences under the influences of the geographical, cultural, and social environments throughout his development. Personality, to which projective techniques are the key, is viewed as "a dynamic process, the conformal activity of the individual who is engaged in creating, maintaining and defending that 'private world.' ....."

(Frank, 1948).

Lindzey (1961) proposed the following definition:

> a projective technique is an instrument that is considered especially sensitive to covert or unconscious aspects of behavior, it permits or encourages a wide variety of subject responses, is highly multidimensional, and it evokes unusually rich and profuse response data with a minimum of subject awareness concerning the purpose of the test. (Lindzey, 1961 p. 45).

The sentence completion method is based on the assumption that the individual is supplying information about himself when he responds to stimulus stubs. He reveals general personality styles as well as clues about specific conflicts and problem areas. Incomplete sentences are considerably more structured than inkblots and allow greater individual freedom for the test developer in building stubs relevant to his purposes. This places them in an intermediate position on a dimension of structured-unstructured.

Rohde (1946) advocated use of the Sentence Completion Test (SCT) as a tool for clinical psychologists and other professional people who deal with youth problems and who need to become intimately acquainted with the needs, inner conflicts, fantasies, sentiments, attitudes, aspirations, and adjustment difficulties of their clients. Direct questioning tends, she maintained, to make the individual self-conscious and puts him on the defensive. Freedom of expression is limited in that the questions usually control the answers; but projective techniques avoid such resistance or control. They reveal latent needs, sentiments, attitudes, and aspirations which the subject would be unwilling or unable to recognize or to express in direct communication.

> The sentence completion device in which the subject is asked to read to himself the forepart of a sentence is essentially a projection technique utilizing free association. In unconstrained response to sentence beginnings, the subject inadvertently reveals his true self, since there is no way in which he can anticipate the significance of his answers for personality study. (Rohde, 1946, p. 175)

Goldbert (1968) in his review of the status of sentence-completion methods notes that it is used relatively more as a clinical than as a research instrument. Given the flexibility and ease of construction of the instrument, however, a body of research is accumulating on this method.

Aronoff (1967; 1970) focused on the assessment of safety and esteem motives, as characterized by Maslow (1970). In two naturalistic studies, Aronoff (1967; 1970) using a sentence-completion test, distinguished reliably between safety-and esteem-oriented individuals.

Wilson and Aronoff (1973) carried out a study in order to establish the construct validity of the sentence-completion test for assessing safety and esteem motives. A large number of students were given the test and 36 safety-oriented and 36 esteem-oriented subjects were selected and given the manifest anxiety, dominance, and dependency subscales from the MMPI. The results indicated that safety-oriented subjects were significantly higher on manifest anxiety and dependency and lower on dominance than esteem-oriented subjects. These studies provide evidence in support of the assumption that the Sentence Completion Test (Aronoff, 1967) measures motivational variables and helps to establish the construct validity of scores derived from the SCT.

Summary

The advent of the electronics age has introduced people from all walks of life to the computer. This meeting can often launch a person into anxiety and fear of the machine. Research indicates that approximately 30% of those whose jobs involve computers experience anxiety because of them. Raub's (1981) study indicated that "hands on" experience reduced anxiety but did not change the subject's attitudes toward computers. Studies

examining the performance of state anxious subjects on computer learning tasks are contradictory. Leherissey (1971) indicates that high state anxious subjects perform better on a computer learning task than low state anxious subjects. O'Neil (1969) found the opposite, that high state anxious subjects made more errors on a computer learning task than low state anxious subjects. More research is indicated to resolve this discrepancy. Data from Katz and Dalby (1981) indicates that repeated exposure to computers causes a positive increase in children's attitudes toward them.

Research by Frankel (1981), Marks, Gelder, and Edwards (1968), Lang et ale (1965) and Cautela (1966b) suggests that while hypnosis may not be as effective as behavioristic methods in reducing phobias, it is effective when used in conjunction with other methods. One aim of the current study is to investigate the effectiveness of hypnosis coupled with an educational method in reducing anxiety.

CHAPTER III

METHOD

Subjects

A total of 46 individuals, employees of Pittsburg State University: who self-selected to attend an in-service training workshop called "Computer Phobia",were used as subjects. These 46 subjects were divided into two groups receiving treatment and one group, used as a control, which received no treatment. The effectiveness of treatment was determined by the difference between pre and post-treatment ratings on the Sheverbush-Gordon Computer Reaction Report.

Apparati

The instrument used to evaluate the subjects level of anxiety concerning computers was the Sheverbush-Gordon Computer Reaction Report (SGCRR). This Reaction Report is a projective type questionnaire consisting of three incomplete sentences for the subjects to respond to. These three sentences are constructed to elicit responses which describe the way the subject feels about computers and computer use. With the rationale for the test being much like a projective personality test, the SGCRR places the respondent on a bi-polar scale and must be interpreted in terms of either high or low scores on each of the four attitudinal factors. The SGCRR also asks the subject to estimate the number of hours per week he/she uses a computer.

Slides and handouts were used in conjunction with an educational presentation to present information to the subjects about the history and use of computers. An Osborne portable home computer system was used to

demonstrate actual computer operations.

Procedure

Group #1, N = 14, assembled for an educational presentation on the history and use of computers. After an introduction about the purpose of the workshop the subjects were given consent and information forms. They were then given the SGCRR as a pre-test measure of their attitudes about computers. Their responses were then collected by the experimenter. At this time an educational presentation was given by a well-known teacher and speaker in the field of computer technology. The subjects were given handouts about microcomputers which explained terminology, the relationship between the parts and the system, and what the various parts do. The subjects were then given a lecture with an accompanying slide presentation dealing with computer applications and how computers are interfaced with their users. Historical aspects of computers were presented as terminology was explained. Information storage systems and use of the PRIME system at P. S. U. was explained. Actual use of a microcomputer was demonstrated using an Osborne portable computer. At this point, an overall question and answer period was held. The subjects were then given the SGCRR as a post-test measure of attitudes about computers.

Group #2, N = 20, was given the same presentation as group #1 up to the end of the slide presentation.

At this point in the program the subjects were placed in a state of relaxation via quasi-hypnotic and mental imagery techniques. After this relaxation session, the educational presentation was then continued as for group #1. At this time a question and answer session was provided.

for group #1. At this time a question and answer session was provided.

Group #3, N = 12, served as a control group. This group was assembled and given the SGCRR as a pre-test measure of attitudes about computers. In lieu of an educational presentation they were then given a tour of the Pittsburg State University computer facilities. This tour is a standard presentation which is given to every employee of Pittsburg State University. Information given the subjects on the tour was basic information about concepts and usage of computers.

They were told the purpose of the computer center at P. S. U.; 1) support of academic programs, 2) support of administrative functions, and 3) support of research. The group then viewed the student terminal room. After this the actual computer units were viewed and described as to what each does, not how it does it. At this point a question and answer session was provided. At the end of the tour the subjects were given the SGCRR as a post-test measure of attitudes about computers.

Subjects responses to the SGCRR were evaluated on the basis of four attitudinal variables: confidence, anxiety, expectation and interest. Pre and post test differences in these four variables were evaluated using a Likert type scale of 1 to 5. Three independent raters were used for this task.

Statistical Analysis

The Wilcoxon Matched-Pairs Signed Ranks Test was used to assess the relationships that exist between pre and post-test attitudes about computers as measured by the SGCRR. For any pair of scores the Wilcoxon test takes account of the sign of the difference between each pair and the size of the difference so that the scores may be rank ordered among

the set. With the Wilcoxon Signed Ranks test the decision rule is: If $T_{obt} \leq T_{crit}$, reject H_0. Determining Tobt involves four steps:

a. Calculate the difference between each pair of scores.

b. Rank the absolute values of the difference scores from the smallest to the largest.

c. Assign to the resulting ranks the sign difference score whose absolute value yielded that rank.

d. Compute the sum of the ranks, separately for the positive and negative signed ranks. The lower sum is Tobt.

The Spearman rho correlation coefficient was used to determine the level of interrater reliability. The formula for the Spearman rho correlation was:

d = difference in rank

$$r_{rho} = 1 - \frac{6\Sigma d^2}{N^3 - N}$$

The level of significance was set at .05 for all statistical treatments.

RESULTS

This study was conducted to examine the efficacy of two different educational methods in the reduction of computer fear. This study strongly focused on the effectiveness of a quasi-hypnotic session in the reduction of computer fear.

The statistical analysis of the data was performed by an IBM 370-125 computer operated by the Computer Center at Pittsburg State University. Because the data were expressed by nominal and ordinal measurement rather than by interval measurement, and because the data were not determined to be linear, non-parametric statistical methods were determined to be the appropriate means of analysis. Means, standard deviations and ranges were calculated for each of the four characteristics measured and are reported in Table II. The data are based on results compiled from questionnaires given to employees of Pittsburg State University who attended a workshop on computers. Of the 48 questionnaires, 46 (95%) were completed, returned and analyzed.

Hypothesis One There is no significant difference between ratings of a subject's confidence level as measured by the Sheverbush-Gordon Computer Reaction Report (SGCRR) before and after a subject attends a workshop on computers.

A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the confidence level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III.

Of three raters used, rater number one's scores generated a T_{obt} value of 3.35 which exceeded the critical value of 2.71 needed at the ;05 level of significance (Snodgrass, 1977, p. 429). The scores of raters number two and three failed to reach the critical value necessary for significance; therefore, hypothesis one is retained. The calculated r_s value of .26 between raters one and two failed to reach the critical value of .45 needed at the .05 level of significance. The calculated r_s value of +.53 between raters two and three exceeds the critical value of .45 needed at the .05 level of significance. The calculated rs value of .04 between raters two and three failed to reach the critical value necessary at the .05 level of significance (Snodgrass, 1977, p. 433).

Hypothesis Two' There is no significant difference between ratings of anxiety level as measured by the SGCRR before and after a subject attends a workshop on computers. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the anxiety level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses

can be found in Tables II and III.

Of three raters used, rater number one's scores generated a Tobt value of 3.42 which exceeded the critical value of 2.85 needed at the .05 significance level (Snodgrass, 1977, p. 433). Rater number three's scores generated a T_{obt} value of 3.64 which exceeded the critical value of 3.64 needed at the .05 level of significance. The scores of rater number two failed to reach the critical value necessary for significance. The calculated r_s value of .36 between raters one and two failed to reach the critical value of .64 needed at the .05 level of significance (Snodgrass, 1977, p. 433). The calculated r_s value of .19 between raters one and three and the calculated r value of .17 between raters two and three also failed to reach the necessary critical value. Therefore, hypothesis two was retained.

Hypothesis Three There is no significant difference between ratings of expectation as measured by the SGCRR before and after a subject attends a workshop on computers. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the anxiety level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III .

Of three raters used, all three raters' scores generated Tobt values which failed to reach the critical values needed for significance (Snodgrass, 1977, p. 429). The calculated r_s value of .68 between raters one and two exceeded the critical value of .64 needed at the .01 level of significance. The calculated r_s value of .68 between raters one and two equals the critical value of .68 needed at the .01 level of significance. The calculated r_s value of .45 between rater two and three failed to reach the critical value of .45

needed at the .05 level of significance (Snodgrass, 1977, P. 433); therefore, hypothesis three was retained.

Hypothesis Four There is no significant difference between ratings of interest as measured by the SGCRR before and after a subject attends a workshop on computers. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the anxiety level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III.

Of three raters used, all three raters' scores generated Tobt values which failed to reach the critical values needed for significance (Snodgrass, 1977, p. 429). The calculated r_s value of .76 between raters one and two exceeded the critical value of .64 needed at the .01 level of significance (Snodgrass, 1977, p. 433). The r_s values calculated between raters one and three and two and three failed to reach the critical values necessary for significance at the .05 level; therefore, hypothesis four was retained.

Hypothesis Five There is no significant difference between ratings of the subject's confidence level as measured by the SGCRR before and after a subject attends a workshop on computers which included a relaxation training session. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the anxiety level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III.

Rater number one's scores generated a Tobt value of 3.4 which exceeded

the critical value of 2.7 needed at the .01 significance level (Snodgrass, 1977, p. 429). Rater number two's scores generated a Tobt value of 2.3 which exceeded the critical value of 1.75 needed at the .025 significance level. Rater number three's scores generated a T_{obt} value of 3.1 which exceeded the critical value of 2.4 necessary at the .01 level of significance.

The calculated r_s value between raters one and two exceeded the critical value of .64 necessary at the .01 level of significance (Snodgrass, 1977, p. 429). The calculated r_s value of .90 between raters one and three exceeded the critical value of .59 needed at the .005 level of significance. The calculated r_s value of .75 between raters two and three exceeded the critical value of .59 needed at the .005 level of significance (Snodgrass, 1977, p. 433); therefore, hypothesis five was rejected.

Hypothesis Six There is no significant difference between ratings of anxiety level as measured by the SGCRR before and after a subject attends a workshop on computers which included a relaxation training session. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the anxiety level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III. Rater number one's scores generated a T_{obt} value of 2.95 which exceeded the critical value of 2.25 needed at the .01 level of significance (Snodgrass, 1977, p. 429). Rater number two's scores yielded a Tobt value of 7, which failed to reach the critical value needed at the .05 level of significance. Rater number three's scores generated a Tobt value of 3.1 which exceeded the critical value of 2.45 necessary at the .01 level of significance.

The calculated r_s value of .64 between raters one and two exceeded the critical value of .53 necessary at the .01 level of significance (Snodgrass, 1977, p. 433). The calculated rs value of .65 between raters one and three exceeded the critical value of .53 necessary at the .01 level of significance. The calculated r_s value of .59 between raters two and three exceeded the critical value of .53 needed at the .01 level of significance. Consequently, hypothesis six is rejected.

Hypothesis Seven There is no significant difference between ratings of expectation level as measured by the SGCRR before and after a subject attends a workshop on computers which included a relaxation training session. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the expectation level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III. Rater number one's scores generated a Tobt value of 3.55 which exceeded the critical value of 3.05 needed at the .01 level of significance (Snodgrass, 1977, p. 429). Rater number two's scores yielded a Tobt value of 16.5 which failed to reach the critical value necessary at the .05 level of significance. Rater number three's scores yielded a Tobt value of 11 which failed to reach the critical value necessary at the .05 level of significance.

The calculated r_s value of .39 between raters one and two exceeded the critical value of .37 necessary at the .05 level of significance (Snodgrass, 1977, p. 433). The calculated r_s value of .5.7 between raters one and three exceeded the critical value of .53 needed at the .05 level of significance.

The calculated r_s value of .63 between raters two and three exceeded

the critical value of .53 needed for significance at the .01 level. Consequently, hypothesis seven is retained.

Hypothesis Eight There is no significant difference between ratings of interest as measured by the SGCRR before and after a subject attends a workshop on computers which included a relaxation training session. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the interest level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III.

Rater number one's scores generated a Tobt value of 3.55 which exceeded the critical value of 3.25 necessary at the .05 level of significance (Snodgrass, 1977, p. 429). Rater number two's scores yielded a T_{obt} value of 18 which failed to reach the critical value needed at the .05 level of significance. Rater number three's scores generated a T_{obt} value of 3.25 which exceeded the critical value of 2.90 necessary at the .025 level of significance.

The calculated r_s value of .45 between raters one and two exceeded the critical value of .37 necessary at the .05 level of significance (Snodgrass, 1977, p. 433). The calculated r_s value of .71 between raters one and three exceeded the critical value of .59 necessary at the .005 level of significance. The calculated r_s value of .24 failed to reach the critical value needed at the .05 level of significance. Therefore, hypothesis eight is rejected.

Hypothesis Nine There is no significant difference between ratings of a subject's confidence level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State Univer-

sity. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the anxiety level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III'. Rater number one's scores generated a Tobt value of 7 which failed to exceed the critical value needed at the .05 level of significance (Snodgrass, 1977, p. 429). The scores of rater number two were dropped because fewer than five pairs of scores had differences between them. The Wilcoxon test is not designed to analyze fewer than five sets of scores. Rater number three's scores generated a Tobt value of 8 which failed to reach the critical level needed at the .05 level of significance.

The calculated r_s value of .79 between raters one and two exceeded the critical value of .71 necessary at the .01 level of significance (Snodgrass, 1977, p. 433). The calculated r_s value of .99 between raters one and three exceeded the critical value of .77 needed at the .005 level of significance. The calculated r_s value of .80 between raters two and three exceeded the critical value of .71 necessary at the .01 level of significance. Therefore, hypothesis nine is retained.

Hypothesis Ten There is no significant difference between ratings of anxiety level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the anxiety level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III. The scores of raters number one, two and three yielded Tobt

values of 10.5, 5, and 6, respectively, which failed to reach the critical value necessary at the .05 level of significance (Snodgrass, 1977, p. 429).

The calculated r_s value of .60 between raters one and two exceeded the critical value of .50 necessary at the .05 level of significance (Snodgrass, 1977, p. 433). The calculated r_s value of .81 between raters one and three exceeded the critical value of .71 necessary at the .01 level of significance. The calculated r_s value of .42 between raters one and three failed to reach the critical value needed at the .05 level of significance. Therefore, hypothesis ten is retained.

Hypothesis Eleven There is no significant difference between ratings of expectation level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the expectation level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raters used. A summary of these two analyses can be found in Tables II and III.

The scores of raters one, two and three yielded Tobt values of 6, 3, and 7, respectively, which failed to reach the critical value necessary at the .05 level of significance (Snodgrass, 1977, p. 429).

The calculated r_s value of .06 between raters one and two failed to reach the critical value of .50 necessary at the .05 level of significance (Snodgrass, 1977, p. 433). The calculated r_s value of .93 between raters one and three exceeded the critical value of .77 necessary at the .005 level of significance. The calculated r_s value of .09 between raters one and three failed to reach the critical value needed at the .05 level of signifi-

cance. Therefore, hypothesis eleven is retained.

Hypothesis Twelve There is no significant difference between ratings of interest level as measured by the SGCRR before and after a subject participateS in a tour of the Computer Center at Pittsburg State University. A Wilcoxon Matched Pairs Signed Ranks test of significance was conducted on the pre-post ratings of the interest level. A Spearman Rho correlation coefficient was used to determine the interrater reliability between the three raterS used. A summary of these two analyses can be found in Tables 11 and III. T1he scores of raters number one and three yielded Tobt values of 10.5 and 6, respectively, which failed to reach the critical value necessary at the .051eve1 of significance (Snodgrass, 1977, p. 429). The scores of rater two were dropped because fewer than five pairs of scores had differences between them. The Wilcoxon test is not designed to analyze fewer than five sets of scores.

The calculated r_s value of .61 between raters one and two exceeded the critic.a1 value of .50 necessary at the .05 level of significance (Snodgrass, 1977, p. 433). The calculated r_s value of .78 between raters one and three exceeded the critical value of .71 necessary at the .01 level of significance. The calculated r_s value of .60 between raters two and three exceeded the critic.a1 value of .50 necessary at the .05 level of significance. Therefore, hypothesis twelve is retained.

Summary

This study examined the efficacy of three different educational methods in the reduction of computer fear.

The first hypothesis examined differences between ratings of a subject's confidence level as measured by the Sheverbush-Gordon Computer Reaction Report (SGCRR) before and after a subject attends an educational workshop on computers. No significant differences among subjects were found which suggests that confidence level is not significantly affected by attending a workshop on computers.

The second hypothesis examined differences between ratings of anxiety level as measured by the SGCRR before and after a subject attends an educational workshop on computers. No significant differences among subjects were found which suggests that anxiety level is not significantly affected by attending a workshop on computers.

The third hypothesis examined differences between ratings of expectation level as measured by the SGCRR before and after a subject attends an educational workshop on computers. No significant differences were found among subjects which suggests that expectation level is not significantly affected by attending a workshop on computers.

The fourth hypothesis examined differences between ratings of interest level as measured by the SGCRR before and after a subject attends an educational workshop on computers. No significant differences were found among subjects which suggests that interest level is not significantly affected by attending a workshop on computers.

The fifth hypothesis examined differences between ratings of a subject's confidence level as measured by the SGCRR before and after a subject attends an educational workshop on computers which included a relaxation training

session. Significant differences among subjects were found which suggests that confidence level is significantly affected by attending a workshop on computers which included a relaxation training session.

The sixth hypothesis examined differences between ratings of anxiety level as measured by the SGCRR before and after a subject attends an educational workshop on computers which included a relaxation training session. Significant differences among subjects were found which suggests that anxiety level is significantly affected by attending a workshop on computers which included a relaxation training session.

The seventh hypothesis examined differences between ratings of expectation level as measured by the SGCRR before and after a subject attends an educational workshop on computers which included a relaxation training session. No significant differences were found among subjects which suggests that expectation is not significantly affected by attending a workshop on computers which included a relaxation training session.

The eighth hypothesis examined differences between ratings of interest level as measured by the SGCRR before and after a subject attends an educational workshop on computers which included a relaxation training session. Significant differences were found among subjects which suggests that interest level is significantly affected by attending a workshop on computers which included a relaxation training session.

The ninth hypothesis examined differences between ratings of a subject's confidence level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University. No significant differences among subjects were found which suggests that confidence level is not significantly affected by participating in a tour of the Computer Center at Pittsburg State University.

The tenth hypothesis examined differences between ratings of anxiety level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University. No significant differences among subjects were found which suggests that anxiety level is not significantly affected by participating in a tour of the Computer Center at Pittsburg State University.

The eleventh hypothesis examined differences between ratings of expectation level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University. No significant differences among subjects were found which suggests that expectation level is not significantly affected by participating in a tour of the Computer Center at Pittsburg State University.

The twelfth hypothesis examined differences between ratings of interest level as measured by the SGCRR before and after a subject participates in a tour of the Computer Center at Pittsburg State University. No significant differences among subjects were found which suggests that interest level is not significantly affected by participating in a tour of the Computer Center at Pittsburg State University.

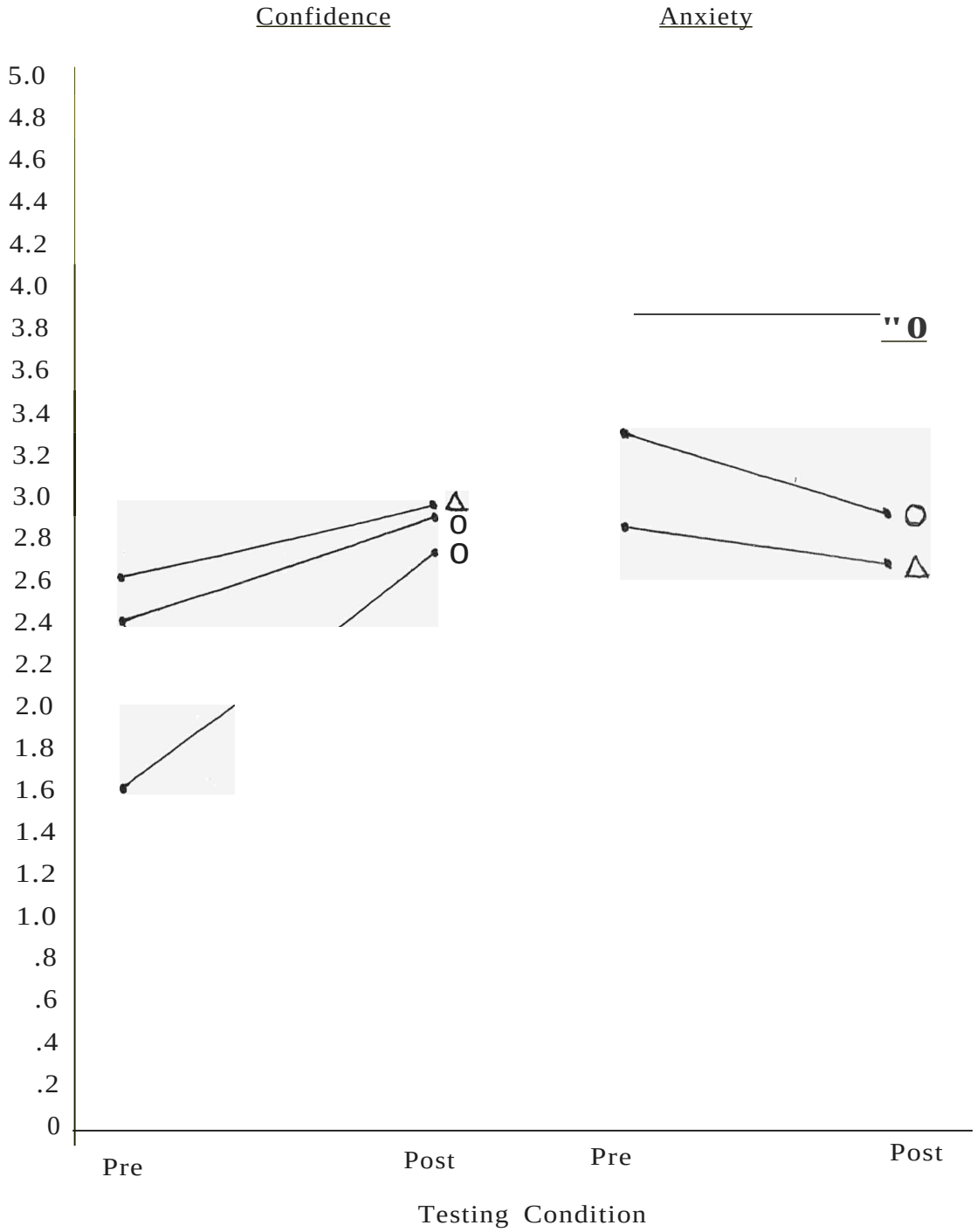

Figure I. Frequency Polygon of Pre and Post Test Measures from the Sheverbush-Gordon Computer Reaction Report (SGCRR)

Key

Group 1 Circle - 0

Group 2 Triangle - Δ

Group 3 Square - 0

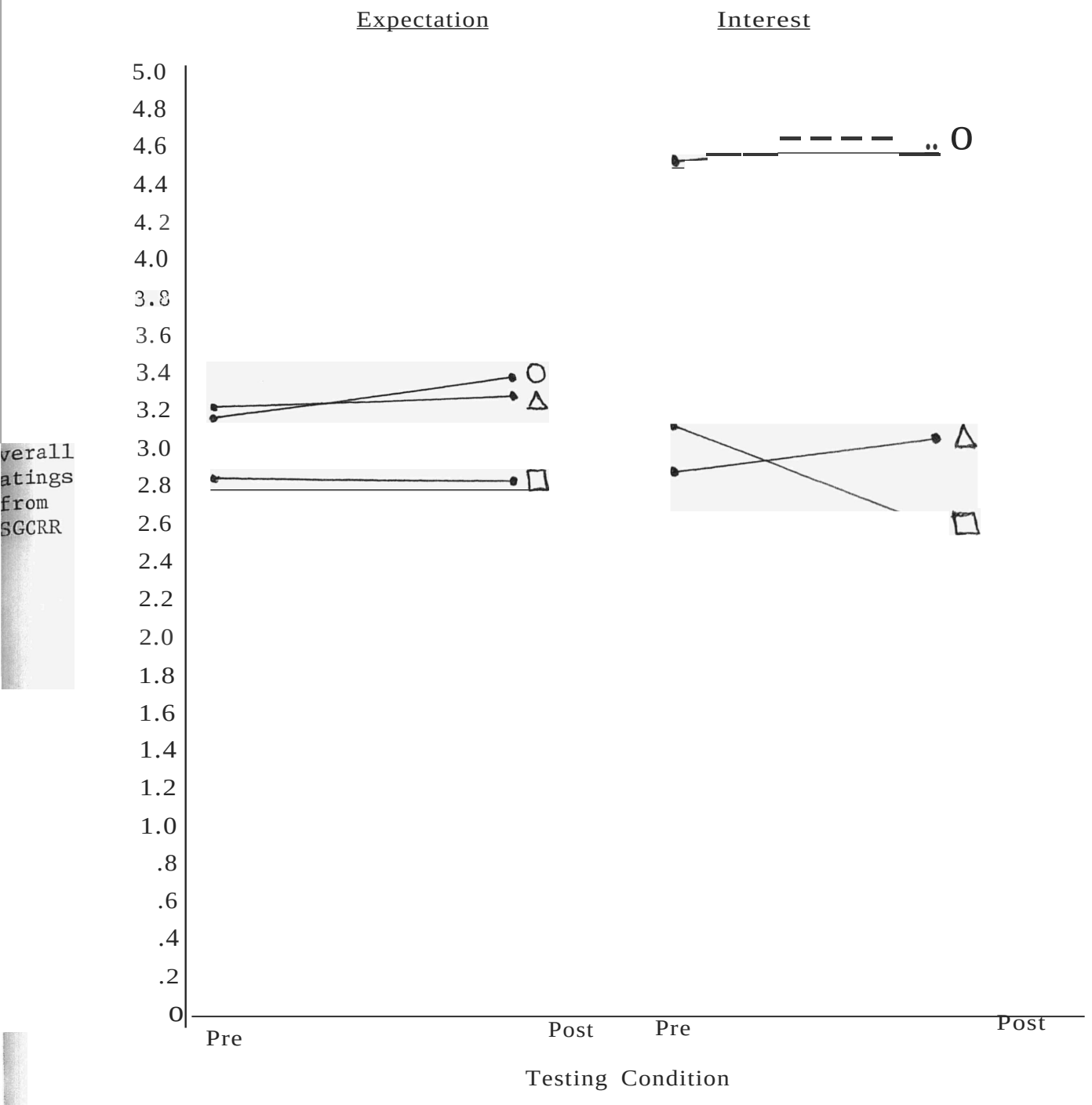

Figure I. (Continued) Frequency Polygon of Pre and Post Test Measures from the Sheverbush-Gordon Computer Reaction Report (SGCRR)

Key

Group 1 Circle - 0
Group 2 Triangle - △
Group 3 Square - □

Table 1

Means, Standard Deviations, Ranges, and Variances of Pre and Post Test Ratings on Four Measures from the Sheverbush-Gordon Computer Reaction Report (SGCRR)

	Mean		S.D.		Range		Variance	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Group 1								
conf.	2.45	2.91	1.21	1.27	1-5	1-5	1.43	1.59
anx.	3.28	2.84	1.31	1.22	1-5	1-5	1.68	1.45
expo	3.19	3.35	1.01	0.93	1-5	1-5	1.01	0.84
into	4.54	4.63	2.01	1.43	1-5	1-5	4.04	2.04
Group 2								
conf.	2.63	2.93	2.72	1.31	1-5	1-5	7.29	1.69
anx.	2.81	2.65	1.11	2.72	1-5	1-4	1.21	7.29
exp.	3.20	3.25	2.76	0.75	1-4	2-5	7.49	0.55
into	2.81	3.06	1.12	1.10	1-5	1-5	1.24	1.19
Group 3								
conf.	1.61	2.72	0.83	3.15	1-4	1-4	0.68	9.70
anx.	3.91	3.83	0.96	1.02	2-5	2-5	0.90	1.02
exp.	2.86	2.80	1.07	3.45	1-5	1-5	1.11	11.60
into	3.11	2.55	2.18	1.13	1-4	1-4	4.75	1.24

Table II

Results of Wilcoxon Matched Pairs Signed Ranks Test

	Rater 1			Rater 2			Rater 3		
	Tobt	Tcrit	Sig.	Tobt	Tcrit	Sig.	Tobt	Tcrit	Sig.
Group 1									
conf.	*3.35	2.71		Not significant			Not significant		
anx.	*3.422	2.85		Not significant			*3.64	3.0	
exp.	Not significant			Not significant			Not significant		
into	Dropped			Not significant			Not significant		
Group 2									
conf.	**3.4)	2.7		#2.3	1.75		**3.1	2.45	
anx.	**2.95	2.25		Not significant			**3.05	2.45	
exp.	**3.55	3.05		Not significant			Not significant		
into	*3.55	3.25		Not significant			#3.25	2.9	
Group 3									
conf.	Not significant			Not significant			Not significant		
anx.	Not significant			Not significant			Not significant		
exp.	Not significant			Not significant			Not significant		
into	Not significant			Dropped			Not significant		

* significant at .05
\# significant at .025
** significant at .01

Table III

Spearman Rho Correlation Coefficients

Group 1

		Rater 1 r_s sig.	Rater 2 rs sig.	Rater 3 r_s sig.
Rater 1				
conf.				
anx.				
expo				
into				
Rater 2				
conf.		+.26 Not sig.		
anx.		+.36 Not sig.		
exp.	**	+.68 >.64		
into	**	+7.6) .64		
Rater 3				
conf.	**	+.53) .45	+.04 Not sig.	
anx.		+.19 Not sig.	+.17 Not sig.	
expo	**	+.68).64	+.45 Not sig.	
into		+.34 Not sig.	+.16 Not sig.	

* significant at .05
\# significant at .025
** significant at .01
significant at .005

Table III (Continued)

Spearman Rho Correlation Coefficients

Group 2

		Rater 1 r_s sig.	Rater 2 rs sig.	Rater 3 r_s sig.
Rater 1				
conf.				
anx.				
expo				
into				
Rater 2				
conf.	**	+.68 ≥.64		
anx.	**	+.64 ≥.64		
expo	*	+.392..37		
into	*	+. 45 ≥.37		
Rater 3				
conf.	##	+.90 ≥.59	## +.75 ≥.59	
anx.	**	+.65 ≥.53	** +.59> .59	
expo	**	+.57 ≥.53	** +.63 ≥.59	
into	##	+.71 ≥.59	+.24 Not sig.	

* significant at .05
\# significant at .025
** significant at .01
significant at .005

Table III (Continued)

Spearman Rho Correlation Coefficients

Group 3

	Rater 1 r_s sig.	Rater 2 r_s sig.	Rater 3 r_s sig.
Rater 1			
conf.			
anx.			
exp.			
into			
Rater 2			
conf.	** +.792.71		
anx.	* +.60≥.50		
exp.	+.06 Not sig.		
into	** +.61≥.50		
Rater 3			
conf.	## +.99≥.77	** +.80≥.71	
anx.	** +.81>.71	+.42 Not sig.	
exp.	# +.93≥.77	+.09 Not sig.	
into	** +.78≥.71	* +.60>.50	

* significant at .05
# significant at .025
** significant at .01
significant at .005

Table IV

Number of Subjects as Related to Direction of Difference Between Pre and Post Scores

	Rater 1			Rater 2			Rater 3		
	pOSe	neg.	drop	pOSe	neg.	drop	pOSe	neg.	drop
Group 1									
conf.	8	2	4	7	4	3	6	2	6
anx.	6	1	7	7	4	3	6	1	7
exp.	1	4	9	6	4	4	3	3	8
into	3	1	10	3	3	8	5	2	7
Group 2									
conf.	10	0	10	11	2	7	11	0	9
anx.	14	0	6	2	5	13	0	8	12
expo	10	0	10	8	3	9	8	2	10
into	7	1	12	5	4	11	8	1	11
Group 3									
conf.	5	2	5	4	0	8	6	2	4
anx.	3	3	6	3	2	7	5	2	5
expo	4	2	6	1	5	6	4	2	6
into	3	4	5	2	0	10	3	2	7

Chapter V

Conclusions

This study examined the effectiveness of an educational presentation paired with relaxation exercises versus that of an educational presentation alone in the reduction of computer fear. Although the recommendations of this study may seem applicable to people employed in a variety of work settings, the results may only be appropriately generalized to employees of Pittsburg State University in the state of Kansas, from which the sample was drawn.

The data from this study suggest, as does Raub (1981), that an educational presentation can be effective in reducing computer anxiety. It was found that an educational presentation alone (Group 1) reduced a subject's anxiety level by a mean value of .44 on a scale from 1 to 5. An educational presentation with a relaxation training session (Group 2) reduced a subject's anxiety level by a mean value of .16. Participating in a tour of the Computer Center at Pittsburg State University (Group 3) reduced a subject's anxiety level by a mean value of .08.

Although Group 1 experienced a greater mean reduction in anxiety, the statistical confidence level of .01 for the Group 2 figures is more powerful than the level of .05 obtained by the Group l figures. Therefore, there is a greater likelihood that the Group 2 difference was not due to chance. That the interrater reliability coefficients for the Group 2 data achieved significance while the Group 3 coefficients did not, also supports the above conclusion.

The second conclusion suggested by the data is that an educational

presentation paired with relaxation training (Group 2) produces a higher post-treatment level of confidence in a subject. Wilcoxon scores on the confidence variable are significant across all three raters. The highly significant interrater reliability correlations here also support this conclusion.

The third conclusion suggested by the data is that an educational presentation paired with relaxation training (Group 2) produces a greater positive post-treatment change in interest level. Groups 1 and 2 showed changes of .09 and .25, respectively. Group 3 showed a change of a minus .56. Wilcoxon values are significant in regard to the interest variable for Group 2 but not for Groups 1 and 3. Significant interrater reliability correlations here also support this conclusion.

This study indicates that relaxation training paired with an educational method is as effective as that method alone in reducing computer anxiety. It also indicates that relaxation training paired with an educational method is superior in fostering interest and increasing confidence than an educational method alone.

Suggestions for Future Research

In viewing the results of this study, it is suggested that additional research be conducted to further clarify the efficacy of an educational presentation versus an educational presentation plus relaxation training in the reduction of computer fear.

1. The present study should be replicated with a larger sample and should include computer users in a variety of work settings, and from additional states.

2. Future research should include "hands on" experience with computers and investigate the relationship between education, "hands on" experience"and anxiety.
3. Future research should examine additional variables which may influence a person's level of computer anxiety. Specific variables to be examined include:
   a) the relationship between age and computer anxiety.
   b) the relationship between sex and computer anxiety.
4. Future research should focus on construction and validation of an objective test for the express purpose of measuring a subject's level of computer fear.

Sheverbush-Gordon Computer Reaction Report

Please indicate any previous experience you have had with computers by filling in the space below.

I use a computer hours per week.

After reading each sentence below please write statements in the corresponding blanks that describe the ways you feel. You may write as many statements as you wish.

1. When I think about anything involving a computer I feel...

A) _

B) __

C) _

D) _

E) _

2. Using a computer every day at work makes or would make me feel ...

A) _

B) _

C) _

D) _

E) _

3. Thinking of learning more about computers makes or would make me feel ..•

A)

B)

C)

D)

E)

Appendix B

Summary of Subject's Raw Score Data

	Confidence		Anxiety		Expectation		Interest	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
~~Rater 1~~								
Group 1								
Subject No.								
1.	4	5	3	2	4	4	5	5
2.	4	3	2	3	3	3	3	2
3.	4	5	2	2	3	3	3	3
4.	2	2	5	5	5	5	4	4
5.	3	4	4	4	5	5	4	4
6.	2	3	4	3	3	4	3	4
7.	5	5	1	1	5	5	5	5
8.	4	3	3	3	4	4	4	4
9.	1	1	5	4	3	4	3	4
10.	1	4	4	1	2	2	2	2
11.	2	4	4	3	4	3	3	3
12.	2	3	3	3	3	4	3	4
13.	2	2	4	4	4	4	4	4
14.	2	3	4	2	2	4	5	5
Group 2								
Subject No.								
15.	3	4	3	2	3	3	4	4
16.	4	4	2	1	3	4	3	3
17.	2	4	4	3	3	4	3	4
18.	3	3	3	3	4	4	4	4
19.	3	5	2	1	4	4	4	4
20.	2	3	3	2	3	4	3	4
21.	3	4	2	1	3	4	3	4
22.	2	4	2	2	4	4	4	4
23.	1	3	5	4	3	3	3	3
24.	2	3	4	3	4	5	4	4
25.	3	4	4	3	2	3	2	3
26.	2	2	4	3	2	3	2	2
27.	2	2	4	4	2	3	2	3
28.	4	4	2	1	4	4	4	4
29.	3	4	2	1	4	4	5	4

	Confidence		Anxiety		Expectation		Interest	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Subject No.								
30.	3	3	3	2	1	2	2	3
31.	1	1	4	3	2	2	2	2
32.	1	1	4	4	2	3	2	3
33.	5	5	1	1	4	4	5	5
34.	5	5	1	1	4	4	4	4
Group 3								
Subject No.								
35.	3	2	3	4	2	2	2	2
36.	1	1	5	5	2	1	2	1
37.	2	4	4	4	2	4	2	4
38.	2	2	4	5	3	4	3	4
39.	4	4	2	2	5	5	4	4
40.	2	3	4	3	3	4	3	4
41.	2	3	4	3	3	4	4	4
42.	1	1	5	5	5	5	4	3
43.	2	1	5	5	2	1	2	1
44.	1	2	5	5	1	2	1	2
45.	2	2	4	5	3	3	3	3
46.	1	2	5	4	2	2	3	3
Rater 2								
Group 1								
Subject No.								
1.	2	4	2	1	4	3	5	5
2.	4	2	3	2	3	3	2	1
3.	4	5	5	4	2	3	3	3
4.	3	5	1	5	4	5	4	5
5.	4	4	4	4	4	4	5	5
6.	3	3	3	2	4	4	3	3
7.	4	3	4	5	4	5	5	5
8.	2	1	3	2	3	2	2	2
9.	2	3	1	2	1	2	2	3
10.	1	1	1	1	1	1	1	1
11.	1	2	5	3	3	2	3	1
12.	1	2	2	2	2	3	2	2
13.	1	1	4	4	3	3	2	2
14.	1	2	1	2	2	3	2	3

	Confidence		Anxiety		Expectation		Interest	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Group. 2								
Subject No.								
15.	1	2	4	3	3	3	2	2
16.	3	4	2	2	3	4	3	4
17.	1	2	1	2	2	3	1	1
18.	1	1	3	4	3	3	2	1
19.	2	3	3	3	3	4	3	3
20.	1	4	2	2	3	2	2	2
21.	2	1	2	2	3	3	1	1
22.	1	2	4	2	4	3	2	3
23.	1	2	3	3	1	3	1	1
24.	1	2	2	2	1	2	2	2
25.	1	2	4	3	3	2	2	1
26.	1	1	2	2	3	3	1	3
27.	2	1	4	3	3	3	2	2
28.	2	3	1	1	2	3	3	4
29.	2	2	3	2	3	3	4	3
30.	1	2	1	1	2	3	2	3
31.	1	1	3	3	2	2	1	1
32.	1	1	3	3	3	3	2	1
33.	5	5	1	1	3	4	5	5
34.	5	5	1	1	4	4	5	5
Group 3								
Subject No.								
35.	1	1	5	4	5	4	2	2
36.	1	1	4	4	3	3	1	1
37.	1	2	4	3	3	3	2	3
38.	2	2	3	3	3	3	2	3
39.	2	2	3	3	3	3	3	3
40.	1	2	3	3	3	3	4	4
41.	1	2	2	3	4	3	3	3
42.	1	1	4	4	3	1	1	1
43.	1	1	2	2	3	2	1	1
44.	1	2	4	4	3	3	1	1
45.	1	1	3	5	2	1	1	1
46.	1	1	4	5	2	3	1	1

	Confidence		Anxiety		Expectation		Interest	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Group 3								
Subject No.								
35.	3	2	3	4	2	2	2	2
36.	1	1	5	5	2	2	2	2
37.	2	3	4	3	2	2	1	2
38.	1	2	4	4	3	3	3	3
39.	4	4	2	2	5	5	4	4
40.	2	3	4	2	3	4	3	4
41.	1	3	4	3	3	4	4	4
42.	1	1	5	3	5	4	4	3
43.	2	1	5	5	2	1	2	1
44.	1	2	5	5	1	2	1	2
45.	2	2	4	5	3	3	3	3
46.	1	2	5	4	2	2	3	3

Legend

Perceived Level of Variable
1. Least
2. Less
3. l10derate
4. More
5. Most

Group

	Form L					Form M				
	1	2	3	4	5	1	2	3	4	5
	1east				mast	1east				most
conf.										
anx.										
expo										
into										
conf.										
anx.										
expo										
into										
conf.										
anx.										
expo										
into										
conf.										
anx.										
expo										
into										
conf.										
anx.										
exp.										
int.										

Consent Form

To the Participant:

The purpose of this program is to assess the effectiveness of various ways of getting people comfortable with the use of computers.

Your responses to the questionaire will be recorded by number only. Your name will never be associated with your responses.

Do not hesitate to ask questions at any time if anything appears uncertain. If you do not wish to participate in the data collection phase of this program feel free to do so.

If you have any questions please contact:

Dr. R. L. Sheverbush
Home phone: 231-2752
Work phone: 231-7000, ext. 354

Dr. A. O. Brown
Home phone: 231-7285
Work phone: 231-7000, ext. 396

Scott M. Gordon
Home phone: 232-2493

I agree to participate in this experiment under the conditions stated above:

Name : _____

Date: _____

Information Form

The purpose of this program is to assess the effectiveness of various ways of getting people comfortable with the use of computers. We want you to be aware that if you should experience more anxiety than you can comfortably deal with professional help will be available to you. If you have any questions concerning this please contact:

Dr. R. L. Sheverbush
Home phone: 231-2752
Work phone: 231-7000, ext. 354

Dr. A. O. Brown
Home phone: 231-7285
Work phone: 231-7000, ext. 396

Scott M. Gordon
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