

AN ABSTRACT OF THE THESIS OF

Peter Parks for the Master of Science
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Title: The Effect of Audio Tape Recording of TAT Stories as
Compared to Traditional Recording Procedures

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The purpose of the present research endeavor was to determine what effect the use of an audio tape recorder would have on quantifiable results of a clinical test in a clinical testing situation. It was hypothesized that there would be no significant detrimental effects resulting from the use of audio tape recording equipment when compared to hand recording procedures in the administration of the TAT. It was also hypothesized that audio tape recorded TAT stories would be found to be significantly more spontaneous, lengthier, and more descriptive than TAT stories which were hand recorded. Comparisons were also made to determine if significant differences existed in stories produced in Session #1 as compared to Session #2, and if significant differences existed in stories produced by men as compared to stories produced by women.

The sample was comprised of 22 females and 8 males who were currently enrolled in Introduction to Psychology classes at Emporia State University. The results suggested that the use of an audio tape recorder did not have a detrimental effect upon the production of TAT stories. Audio tape recorded stories were found to be significantly

more spontaneous (as measured by words per minute) ($p < .05$) than hand written (by the test administrator) stories. It was also revealed that stories produced in Session #2 had significantly greater values for the number of words ($p < .01$), the number of adjectives ($p < .01$), and the elapse time ($p < .05$) criteria. Comparisons of stories produced by males as compared to females revealed that stories produced by females were less spontaneous (as measured by elapse time) than stories produced by males ($p < .05$).

A Thesis

presented to

The Department of Psychology

Florida State University

Partial Fulfillment

of the Requirements for the Degree

Master of Science.

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of TAT Stories as Compared to
Traditional Recording Procedures

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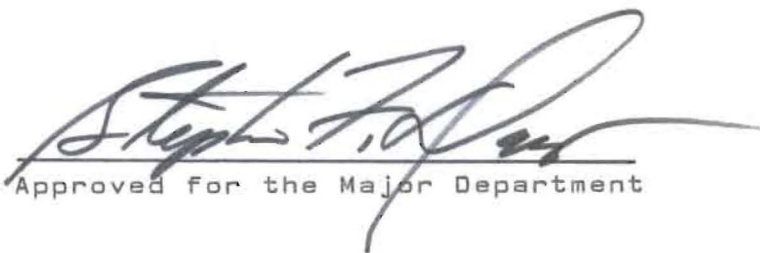
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Peter Parks
Approved for the Graduate Council

August 1984

Thesis
ACKNOWLEDGEMENTS
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Sincere gratitude is paid to Dr. David Dungen, Dr. Stephen Davis, and Dr. Phil Nurtz. As members of my thesis committee, they were extremely helpful in directing me through the difficult and complicated avenues of developing a viable research design, implementing the research procedures, analyzing results, as well as editing and refining the present document. Without their support and guidance this research project would have never reached fruition.


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CHAPTER

INTRODUCTION

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The present age is fraught with an enormous number of technological advances. These technological advances have become available at such an astonishing rate that many professionals in the fields of psychology, psychiatry, counseling, and social work have had serious reservations concerning the use of specific technologies within their professions (Copper, 1976; Marquis, 1957). Others have often uncritically welcomed the use of new technologies without adequately investigating the advantages and disadvantages of such methodological changes. In light of the fact that new technologies are being introduced at an ever increasing rate, there exists a pressing need to develop a systematic approach to the process of screening present and future technologies which are to be considered for use in the areas of education, research, and clinical practice.

Many individuals have questioned the use of recording devices in counseling and psychotherapy, but

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CHAPTER 1

INTRODUCTION

The present age is fraught with an enormous number of technological advances. These technological advances have become available at such an astonishing rate that many professionals in the fields of psychology, psychiatry, counseling, and social work have had serious reservations concerning the use of specific technologies within their professions (Cooper, 1975; Marcuse, 1957). Others have often uncritically welcomed the use of new technologies without adequately investigating the advantages and disadvantages of such methodological changes. In light of the fact that new technologies are being introduced at an ever increasing rate, there exists a pressing need to develop a systematic approach to the process of screening present and future technologies which are to be considered for use in the areas of education, research, and clinical practice.

The appropriate uses of audio recording devices in education, research, and clinical practice have undoubtedly been debated since their use was first reported in 1934 by Dr. Earl Zind of the Worcester State Hospital in Massachusetts (Kogan, 1950). However, the appropriateness of such devices has remained uncertain for fifty years. Many individuals have questioned the use of audio tape recording devices in counseling and psychotherapy due to a

sense of uncertainty about the adverse effects upon the therapeutic relationship (Cooper, 1975; Gelson & Tanney, 1972; Tanney & Gelson, 1972; Van Atta, 1969). Still others have reported the use of audio tape recorders as a valuable aid to the therapy process (Clements, 1976; Kidorf, 1963; Redlich, Dollard & Newman, 1950; Rogers, 1942). The use of audio tape recording devices in education, research, and clinical practice remains an unresolved, yet serious procedural consideration in the mental health field.

Conver (1944) used phonographic recording devices to investigate the completeness and accuracy of counseling interview reports. Clients were unaware of the phonographic recordings, and the microphone was disguised as a gooseneck lamp. All counselors were aware that some of their interviews were being recorded but some were unaware of the specific times that recordings would take place. Other counselors knew the specific times that recording was to take place. Results suggest that the counselors' intelligence, motivation and the effect of knowledge of being recorded had a negligible relationship to the completeness and accuracy scores. However, a significant relationship was found between the counselors' training and the type of item found in the typescript. The non-directive approach favored a larger number of "client items," and the directive approach favored a larger number of "counselor items." Conver (1944) concluded by pointing out that,

Less than one-third of the material appearing in a counseling interview is included in the counselor's report. From three-fourths to nine-tenths of the included material is accurate. There is not a clear-cut relationship between the importance of material and its accuracy of inclusion... Reports written by non-directive counselors tend to be significantly more complete than those written by directive counselors. (p.202)

Harper and Hudson (1952) investigated the effects of electrical recording on marriage counseling. They were interested in comparing segments of counseling sessions in which clients knew they were being recorded and segments in which clients thought that they were not being recorded though they actually were being recorded. A panel of four judges was used to evaluate the effects of knowledge of tape recording on the counseling sessions. They "were unable to detect any negative effects of the recorder on the counseling session" (Harper & Hudson, 1952, p.334). It should be noted that all subjects were told that the first part of the interview was recorded and the last part of the interview was not recorded. It has been suggested "that the no-recording condition was contaminated by the recording condition" (Van Atta, 1969, p.433).

Van Atta (1969) studied the excitatory and inhibitory effects on counseling and psychotherapy of many observational methods including audio tape recording. A

questionnaire was administered to 89 clients after completion of a counseling session at a college counseling center. The questionnaire was designed to evaluate the anticipated effects of various observational procedures including:

- 1) tape-recording;
- 2) being watched by a psychologist through a mirror;
- 3) being watched by a psychologist present in the office;
- 4) sound motion picture;
- 5) television camera.

It was concluded that "clients seem to feel that any method of observation dampens what they apparently experience as the rather stimulating experience of individual counseling" (Van Atta, 1969, p.439). Tanney (1970) found that subjects

Tanney and Gelso (1972) examined the effects of audio recording on clients. They were interested to see if any effects were determined by clients' problem types. One half of the subjects were told that their counseling sessions would be recorded for supervisory purposes while the other half were told that their counseling sessions would not be recorded. Concerning the reasons for counseling, one half reported personal problems and the other half had educational-vocational concerns. "Two-way analysis of variance (Recording Condition X Problem Type) yielded no significant main or interaction effects on any of the four variables noted above" (Tanney & Gelso, 1972, p.349).

Gelso and Tanney (1972) set out to "gather counseling information on the personality variables that might underlie the extent to which clients feel inhibited by audio recording" (p.110). Prior to an experimental counseling session, subjects were asked to complete the Adjective Check List and were divided into two groups according to the nature of their problems; personal-social or educational-vocational. After a one hour audio recorded counseling session, each subject was asked to "rate the extent to which you felt inhibited in expressing personal feelings and/or problems by the fact that your interview was recorded" (Gelso & Tanney, 1972, p.111). (15.3) assessed the effects of both audio and video. Considering all subjects, regardless of their problem category, Gelso and Tanney (1972) found that subjects' scores on the Self-Control, Endurance, Order, Abasement, Deference, and Counseling Readiness Scales showed significant positive correlations with the extent to which subjects felt inhibited by recording. Scores on the Lability, Exhibition and Autonomy scales were negatively correlated with inhibition due to audio recording. When subjects were divided according to problem category, correlations between self-reported inhibition due to recording and scores on the Adjective Check List revealed significant relationships for four scales of the educational-vocational category but no significance was revealed in the personal-social category. Inhibition was

negatively, but not significantly correlated with counseling readiness for subjects in the personal-social category ($p > .10$), but the correlation for subjects in the educational-vocational category was significantly positive ($p < .01$). When considering all subjects, those who felt most inhibited by recording tended to be highly controlled, self denying, and rigid individuals who had strong feelings of inferiority. Gelso and Tanney (1972) described the most inhibited subjects by pointing out that, "They tend to be orderly, dependable and responsible, but at the expense of individuality and spontaneity" (p.112).

Gelso (1973) assessed the effects of both audio and video recording on clients. He also set out to determine if the effects of recording depended upon whether a person was seeking help for personal or educational-vocational concerns. A third purpose of the study was to determine if the effects of recording dissipate quickly. Subjects were divided into three groups.

- 1) The minimum recording group was one in which subjects were told that a few minutes near the end of the counseling sessions would be recorded.
- 2) The audio recording group consisted of subjects who were told that their counseling sessions would be recorded.
- 3) The video recording group consisted of subjects who were told that their interviews would be audio and video recorded.

Using an analysis of variance (ANOVA) subjects' responses to the Van Atta excitement-inhibition questionnaire were compared. All main effects for the recording condition were found to be insignificant. Subjects in the video recording condition who reported having personal problems had a lower mean client satisfaction score than those in the audio and minimum audio groups. An ANOVA computed on the ratings of the Helpee Self-Exploration Scale revealed a significant main effect for recording condition and a significant interaction between problem type and recording condition. Duncan's multiple range test for post hoc comparisons revealed that "self-exploration under minimum audio recording was significantly greater than under either video recording or audio recording" (Gelso, 1973, p.459). It was concluded that "For clients with educational-vocational problems both video and audio methods inhibit self-exploration in counseling, yet neither method reduces satisfaction" (Gelso, 1973, p.460). It was also concluded that "the effects of recording did not decrease or dissipate during the second interview" (Gelso, 1973, p.460).

Roberts and Renzaglia (1965) investigated the effect of three different recording procedures on clients and counselors. The three experimental conditions were:

- 1) audio recording with recorder visible (TR);
- 2) audio recording with only the microphone visible (MO);

3) audio recording with a hidden recording system (NR). Subjects and counselors were told that the sessions were recorded in the TR and MO conditions, but neither subjects nor counselors were informed of recording in the NR condition. Significant differences were found when positive self-references were compared for the three groups. The most positive self-reference statements were made by subjects under the TR condition, next was the MO condition, and least positive statements were made under the NR condition. However, there were no significant differences when negative self statements were compared in the three groups.

Sauer and Marcuse (1957) administered Thematic Apperception Test (TAT) cards to high and low anxiety subjects. The Taylor Manifest Anxiety Scale was used to select 7 high anxiety and 7 low anxiety subjects from a pool of over 1600 "new" college students. The TAT stories were recorded under two different testing conditions:

- 1) overt recording which was carried out with a microphone and recording apparatus in full view and;
 - 2) covert recording which was done with a hidden microphone and recorder.
- The TAT stories were evaluated to determine "the seconds before response, word count, rate (number of words per unit of time), clinical significance of series of stories..., and a subjective (phenomenological) report" (Sauer & Marcuse, 1957, p.393). High anxiety subjects were compared to low

anxiety subjects on the various criteria. Significant differences were not revealed on any criteria. However, significant differences were found within anxiety groups. High anxiety subjects responded faster, gave a greater number of words and talked at a faster rate during overt recording procedures than during covert recording. Similar trends were found with low anxiety subjects but those differences were not significant. West (1953) investigated the effects of audio tape recording on the production of TAT stories. Fifty-nine undergraduate psychology students were used as subjects. Ten TAT cards were divided into two groups for use in the experiment. Series A consisted of Cards 5, 2, 8BM, 10, and 14. Series B was comprised of Cards 1, 9BM, 15, 6BM, and 20. Each subject was administered both sets of cards. One series of cards was administered during each of two testing sessions which were scheduled within a two-week interval. All testing sessions were audio tape recorded. During one session the subjects knew they were being audio tape recorded (K). During the other session, subjects did not know they were being audio tape recorded (DK). Subjects were divided into four groups. For Group 1, Condition K was used with Series A cards for the first session and Condition DK with Series B cards was used for the second testing session. Group 2 received the same card order as Group 1 but the conditions were reversed. Groups 3 and 4 used the same condition sequence as Groups 1 and 2 but they received

Series B cards in the first session and Series A cards in the second session. Analyses for differences in the K and DK conditions were: 1) the length of stories, 2) response time for each story, 3) number of promptings and rejections per story, and 4) "the significance of each story." Results showed no significant differences for any of the criteria compared in the K and DK conditions. It was found, however, that there were significant differences when the first and second sessions were compared. This comparison revealed that the number of words were significantly greater in the second session than in the first session.

In reviewing the previous research designed to investigate the effect of audio recording devices used in clinical practice, several observations are noteworthy. Converg (1944) documented the need for accurate recording techniques when his research revealed that over two-thirds of the counseling material was excluded from counselors' reports. It was also revealed that between 10% and 25% of the included material was inaccurate. Gelso and Tanney (1972) revealed that subjects who requested educational or vocational counseling reported inhibition due to audio recording. No significant levels of inhibition were reported by subjects who requested personal or social counseling. Gelso (1973) reported similar findings. Sauer and Marcuse (1957) reported results which suggest that high

and low anxiety subjects gave longer TAT stories (as measured by the number of words) and more spontaneous TAT stories (as measured by response time and rate) when audio recording was overt as compared to covert recording. West (1953) found no significant differences when TAT stories from subjects who knew they were being recorded were compared to subjects who didn't know they were being recorded.

Concerning the use of audio tape recording devices in clinical settings, it is clear that the available research is full of contradictions while it leaves many questions unanswered. It remains unclear if the use of audio tape recorders is to be recommended for use with some clients and not with others. Gelso and Tanney (1973) have suggested that rigid individuals with strong inferiority feelings are inhibited by audio recording. They also found that individuals interested in educational-vocational counseling were more inhibited by recording than those interested in personal-social counseling. Roberts and Renzaglia (1965) reported finding significant differences between the number of positive self references made by subjects under different recording conditions. No consensus has resulted from the audio tape recording research available at the present date.

With many unanswered questions concerning the use of audio tape recording devices in clinical settings, it is unclear why research has not continued in these areas. Has

research into the use of video recording procedures taken precedence over research into the use of audio tape recording devices? A related topic which has been virtually neglected in the scientific literature concerns the use of audio tape recording equipment in clinical testing situations. Sauer and Marcuse (1957) and West (1953) found results which suggest that knowledge of the use of audio tape recorders does not have a deleterious effect on subjects' responses to the TAT. However, these authors failed to recommend the use of audio recording devices in the administration of the TAT. The use of audio tape recorders in the administration of the TAT has become a common practice for some test administrators (Elms, 1976) without any general agreement among professionals concerning the advantages and disadvantages associated with their use. Once again, it is unclear why this area of research has remained dormant for over 25 years. Marcuse (1957) pointed to an apparent drawback to the use of audio recording devices in the administration of the TAT. He reported that an exploratory experiment revealed "that approximately 15% of some sixty students had expressed subjective discomfort at being recorded" (Marcuse, 1957, p.278). This comment demonstrates one of the most glaring oversights in the experimental designs of much of the previous research designed to investigate the effect of audio recording used in clinical practice. No reported

research has adequately investigated the effect of audio recording of clinical testing material by comparing the results of audio recorded tests with the results of tests which are hand-written by the test administrator. Personal experience in the administration of the TAT has lead this author to suspect subjects are also distracted by traditional hand-written (by test administrator) testing procedures and that Marcuse would have found that at least an equal number of people were disturbed by hand-recording procedures if such a comparison were made.

The use of audio tape recorders in clinical settings has been investigated utilizing a wide range of variables. However, a well designed investigation used to compare the effects of audio tape recording with the effects of hand-written recording (by test administrator) of clinical material has never been reported in the professional literature. It is in light of this glaring oversight that the project of investigating the effect of audio recording of the TAT when compared to the effect of the traditional, hand-recording method has been undertaken.

The purpose of this research indeavor is to determine what effect the use of magnetic audio tape recording equipment has on the administration and quantifiable results of clinical tests in a clinical testing situation. As the result of repeated administration of the TAT, it was hypothesized that:

- 1) there would be no significant detrimental effects

resulting from the use of audio tape recording equipment when compared to hand recording procedures in the administration of the TAT.

2) It was further hypothesized that the tape recorded TAT stories would be found to be significantly more spontaneous, lengthier, and more descriptive than the TAT stories which were hand recorded.

Subjects consisted of 29 females and 8 males. Twenty subjects were freshmen, four were sophomores, one was a junior, and two were seniors. Subjects' ages ranged from 18 to 24 years with a mean age of 19.78 years.

RESULTS

Analysis of variance was conducted on the TAT stories from subjects in a procedure similar to that recommended by Morgan and Murphy (1973). Ten sets of cards were used on each subject. However, card selection for each subject was determined by the experimenter. The sets of five cards each were used for all subjects. Set 1 for males included card numbers 1, 2, 3, 4, and 5. Set 2 for males included card numbers 6, 7, 8, 9, and 10. Set 3 for females included cards 11, 12, 13, 14, and 15. Set 4 for females included cards 16, 17, 18, 19, and 20. Set 5 for females included cards 21, 22, 23, 24, and 25. Set 6 for females included cards 26, 27, 28, 29, and 30. Set 7 for females included cards 31, 32, 33, 34, and 35. Set 8 for females included cards 36, 37, 38, 39, and 40. Set 9 for females included cards 41, 42, 43, 44, and 45. Set 10 for females included cards 46, 47, 48, 49, and 50.

CHAPTER 2

METHOD

SUBJECTS

Thirty students, recruited from undergraduate Introduction to Psychology classes at Emporia State University, were used as subjects in this experiment. Included in this subject sample were 22 females and 8 males. Twenty subjects were freshmen, four were sophomores, one was a junior, and two were seniors (three reported no class standing). Subjects' ages ranged from 18 to 24 years with a mean age of 19.28 years.

APPARATUS

Thematic Apperception Test (TAT) cards were used to elicit stories from subjects in a procedure similar to that recommended by Morgan and Murray (1935). Ten TAT cards were used for each subject. However, card selection for male and female subjects varied slightly as recommended by Bellak (1971). Two sets of five cards each were used for all subjects. Set 1 for males included card numbers 1, 3BM, 6BM, 11, and 13MF. Set 2 for males consisted of cards 2, 4, 7BM, 12M, and 16. Set 1 for females included cards 1, 3BM, 6GF, 9GF, and 13MF. Set 2 for females included cards 2, 4, 7GF, 11, and 16.

Two 8 foot by 10 foot testing rooms were used in the led up to the event shown in the picture, describe

experiment. Each room was furnished with a small table and three chairs. One testing room was equipped with a Wollensak reel to reel audio tape recorder for audio recording of stories. The other testing room was supplied with a pen and paper for hand recording of stories. All recording apparatus (audio tape recorder or pen and paper) were clearly visible to the subject as he or she entered each testing room. (operator operating the audio tape recorder in full view of the subject) and

PROCEDURE (The hand written recording condition was)

Subjects were scheduled for a testing session at the time of recruitment. Upon arrival at the testing area, each subject was advised that the experiment would be divided into two parts and that the experiment would be held in two separate rooms. They were also informed that an audio tape recorder would be used for part of the experiment at which time they were asked if they objected to the use of the audio tape recorder. No subjects reported objections.

Each subject was read the testing instructions prior to the administration of each set of TAT cards. The instructions were selected from Bellack (1971) and read as follows:

This is a test of imagination, one form of intelligence. I am going to show you some pictures, one at a time; and your task will be to make up as dramatic a story as you can for each. Tell what has led up to the event shown in the picture, describe

what is happening at the moment, what the characters are feeling and thinking; and then give the outcome. Speak your thoughts as they come to your mind. Do you understand? Here is the first picture. The

Each subject was administered five TAT cards under both experimental conditions:

- 1) The audio tape recording condition (TR) with the test administrator operating the audio tape recorder and in full view of the subject; and
- 2) The hand written recording condition (HW) with the test administrator writing a verbatim account of the subjects' stories.

Upon completion of the stories for the cards in set 1, each subject was told that the first part of the experiment was completed and that they were to proceed to the other testing room with the experimenter. Upon being seated in the new environment, the instructions were repeated and the cards in set 2 were administered.

This experiment was a mixed subjects design in which the subjects were grouped in the following manner:

Group 1 included 15 subjects (11 female, 4 male) who experienced the audio tape recorded condition (TR1) prior to the hand written condition (HW2);

Group 2 was comprised of 15 subjects (11 female, 4 male) who experienced the hand written condition (HW1) prior to the audio tape recorded condition

(TR2) (See Appendix A).

After all ten TAT cards had been administered, each subject was asked to complete a questionnaire which requested the subjects' age, sex, and class standing. The questionnaire continued, "You have just participated in an experiment in which two methods of recording your responses were used (hand written and tape recorded). Was either method more distracting than the other? If yes; which one and why."

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stories produced by non to stories produced by

stories

tape time for all stories;

in stories

results of the ANOVA used to compare the stories

HW stories revealed that differences in the

words, total number of adjectives and total length

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average was

sessions of

meanings, the average was 78.21 words per minute

difference

CHAPTER 3

RESULTS

The quantitative data derived from the 10 TAT stories elicited from each subject in this mixed two factor experiment were compared with the use of four two-way analyses of variance (ANOVAs). The ANOVAs were performed to compare:

- 1) tape recorded stories to hand recorded stories;
- 2) stories produced in Session #1 to stories produced in Session #2;
- 3) stories produced by men to stories produced by women.

The criteria used to compare these groups were:

- 1) total number of words for all stories;
- 2) total number of adjectives for all stories;
- 3) total elapse time for all stories;
- 4) mean number of words per minute for all stories.

Results of the ANOVAs used to compare TR stories to HW stories revealed that differences in the total number of words, total number of adjectives and total elapse time were all insignificant. However, significant differences were revealed in the comparison of the words per minute data. The average number of words per minute in the hand recorded sessions was 34.82 words per minute. In the tape recorded sessions, the average was 78.21 words per minute. This difference was significant at the $p < .05$ level of

confidence (See Appendix B, tables 1 - 4). Several significant interactions were also revealed in these ANOVAs. Interactions reached the level of significance for the number of words ($p < .01$), the number of adjectives ($p < .05$), and the elapse time criteria ($p < .05$). These interactions were further investigated using an analysis of simple effects (Keppel, 1982). These analyses revealed:

- 1) The number of words given in TR2 and HW2 were significantly greater than the number of words given in HW1 ($p < .05$).
- 2) The number of adjectives given in TR2 was significantly greater than the number of adjectives given in TR1 and HW1.
- 3) The elapse time for stories given in TR2 was significantly greater than the elapse time for stories given in TR1 and HW1 (See Appendix B, tables 5 - 7).

Two-way ANOVAs were also performed to compare stories produced in Session #1 with stories produced in Session #2 for each of the same criteria listed above. Significant differences were revealed for the number of words ($p < .01$), the number of adjectives ($p < .01$), and the elapse time ($p < .05$). Significantly greater values were found for Session #2 than for Session #1 for each of these measures. Differences in the comparison of Session #1 with Session #2 for the words per minute measure were found to be

insignificant (See Appendix B, tables 1 - 4).

Due to the differences in the number of subjects in the male and female groups, an unweighted means analysis was performed to compare the male and female groups. These comparisons revealed a significant difference between males and females in this sample for the total elapse time criteria ($p < .05$). The total elapse time of males averaged 0.97 minutes for all ten cards. The total elapse time for females averaged 1.43 minutes for ten cards. All other single factor comparisons (male vs female) as well as other interactions were found to be insignificant (See Appendix B, tables 8 - 11).

A chi-square distribution was utilized in evaluating the phenomenological questionnaire which asked the subjects if one method of recording was more distracting than the other method. The subjects responses fell within the range expected by chance ($p > .30$). The chi-square value for the test performed on this data equaled 1.69 with two degrees of freedom. This suggests that neither method of recording was considered by the subjects to be significantly more distracting than the other method (See Appendix C).

It was hypothesized that the audio tape recorded stories would be found to be significantly more lengthy and more descriptive than the stories which were hand recorded. This hypothesis was supported by the results.

DISCUSSION

In reviewing the results of this experiment, it can be seen that certain aspects of the experimental hypothesis were supported while other aspects were not supported. The results of the ANOVAs which compared audio tape recorded stories to hand written stories overwhelmingly support hypothesis #1 which predicted that there would be no significant detrimental effects (as measured by the previously outlined criteria) resulting from the use of audio tape recording equipment when compared to hand recording procedures in the administration of the TAT. This hypothesis was once again supported by the chi square test of the data gathered with the phenomenological questionnaire. The results of this test suggest that neither recording procedure was significantly more distracting to the subjects than the other recording procedure. The results of this experiment clearly support the hypothesis that there would be no significant detrimental effects resulting from the use of audio tape recording equipment when compared to hand recording procedures in the administration of the TAT.

Hypothesis #2 suggested that the audio tape recorded stories would be found to be significantly more spontaneous, lengthier, and more descriptive than the stories which were hand recorded. This hypothesis was supported by the results

of the ANOVA for the words per minute variable only. The number of words per minute for stories in the audio tape recorded condition were significantly higher (more spontaneous) than the number of words per minute given in the hand recorded condition. All other single factor comparisons were found to be insignificant and therefore, nonsupportive of hypothesis #2. Hypothesis #2, which contended that audio tape recorded stories would be found to be significantly more spontaneous, lengthier, and more descriptive than hand recorded stories, was partially supported.

The analysis of simple effects performed to investigate the significant interactions for the number of words, the number of adjectives and the elapse time is quite interesting. The specific reason(s) for the pattern of significant differences is not immediately apparant. However, informative trends in the simple effects comparisons are noted. Each of the simple effects comparisons which reached the $p < .05$ level of significance (or higher) had a value for Session #2 which was greater than the compared value for Session #1 (See Appendix D). No simple effects comparisons associated with the significant interactions had values for Session #1 which were significantly greater than for Session #2. This information combined with the results of the ANOVAs comparing Session #1 with Session #2 is quite revealing. The comparisons of Session #1 with Session #2, for the same criteria, reached

the level of significance for each criteria (number of words ($p < .01$), number of adjectives ($p < .01$), and elapse time ($p < .05$)). In each case the values for Session #2 were greater than the values for Session #1. These results are similar to those found by West (1953). The evidence which shows that the values for Session #2 were greater than the values for Session #1, combined with the pattern of simple effects analysis suggest that a practice effect is at least partially responsible for the significant interactions as well as the differences between Session #1 and Session #2. However, it is unclear why the elapse time would be increased as a result a practice effect.

The reasons for the significant difference in the male vs. female elapse time data is unclear at this time. One possible factor in such a difference is that the test administrator was male and that the male subjects felt more at ease in the testing situation than the female subjects. While any conclusions from this male vs. female data would be premature, it does suggest the possibility that sex differences could have an effect upon the production of TAT stories.

On the surface it might appear that the use of an audio tape recorder in clinical testing situations is unquestionably recommended. This is not the case. There are many questions which this investigation has raised which should be pursued further before the blanket use of audio tape recording equipment is recommended for use in clinical

testing situations. The most obvious question which arises in considering the use of audio tape recorders concerns the selection of subjects. Would clients in need of clinical services respond similarly to hand recording and tape recording procedures. This question must be answered before the use of audio tape recording equipment becomes acceptable in clinical testing situations. Another important issue concerns the use of audio tape recorders in the administration of other clinical tests such as the Rorschach and the Weschler intelligence scales. There is a clear need to use caution when considering the generalizability of these experimental results. This experiment opens the way for a variety of research considerations. In addition to the questions concerning the generalizability of research findings, the gender of the test administrator and the testee is a potential factor to be considered in the administration of clinical tests. Another question relates to the effect of multiple administrations of the TAT. Do clients become more comfortable after they become familiar with the TAT format or the test administrator. However cautiously one interprets the results of this experimental project, it is important to look objectively at the research findings. The evidence gathered from this study strongly suggests that TAT stories elicited from college students do not suffer from the use of an audio tape recorder when compared to traditional (hand recording)

procedures. Some evidence also suggests that TAT stories elicited from college students were more spontaneous (as measured by the average words per minute) when audio tape recorded as compared to hand recorded stories.

It is crucial that clinical psychologists and psychiatrists clearly understand the advantages and disadvantages of audio tape recorders in their efforts to better serve those in need of mental health services. However, very little research has been reported in an effort to identify the appropriateness of audio tape recorders used in clinical testing situations. In spite of this lack of clear evidence, audio tape recorders have been used in the recording of TAT responses by individuals such as Elms (1976). It is clear that additional research needs to be focused in this area before this practice of audio tape recording of TAT responses becomes a common procedure. Only with well designed research endeavors can the many questions surrounding the incorporation of audio tape recorders in clinical situations be adequately addressed. The time has come for applied clinical researchers to develop and implement sound research projects designed to investigate the appropriateness of audio tape recorders in clinical practice.

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APPENDIX

EXPERIMENTAL CASE

SESSION

OF 38104

TAPE RECORDS

FIRST

HAND

WRITTEN RECORDS

GROUP

APPENDIX A

HAND WRITTE

FIRST

END

EXPERIMENTAL DESIGN

	SESSION # 1	SESSION # 2
	GROUP 1	
TAPE RECORDED FIRST	TAPE RECORDED SESSION # 1 (TR1)	HAND WRITTEN SESSION # 2 (HW2)
HAND WRITTEN SECOND		
	GROUP 2	
HAND WRITTEN FIRST	HAND WRITTEN SESSION # 1 (HW1)	TAPE RECORDED SESSION # 2 (TR2)
TAPE RECORDED SECOND		

TABLE

ANALYSIS OF VARIANCE SUMMARY TABLE

TOTAL NUMBER OF WORDS

	df	MS	F
4541	1	10841	1.124
4476213	26	124221	
38283	1	38283	1.004
221857	25	21323.2	

.99104 1 MS. 4028104

APPENDIX B

(S #1 VS. S #2)	321788	1	326788	11.144
3/AB	221857	25	29123.2	

S NON-SIGNIFICANT

at 2% .95

1942% .81

TABLE 1

ANALYSIS OF VARIANCE SUMMARY TABLE
 HW VS. TR BY ORDER OF RECORDING METHOD
 TOTAL NUMBER OF WORDS

SOURCE	SS	df	MS	F
A (T-H VS. H-T)	15941	1	15941	.13*
S/A	3478210	28	124221.8	
B (HW VS. TR)	38203	1	38203	1.30*
AXB	326787	1	326787	11.14***
S/AB	821057	28	29323.5	
SESSION 1 VS. SESSION 2				
B (S #1 VS. S #2)	326786	1	326786	11.14***
S/AB	821057	28	29323.5	

* NON-SIGNIFICANT

** $p < .05$

*** $p < .01$

TABLE 2

ANALYSIS OF VARIANCE SUMMARY TABLE
 HW VS. TR BY ORDER OF RECORDING METHOD
 TOTAL NUMBER OF ADJECTIVES

SOURCE	SS	df	MS	F
A (T-H VS. H-T)	28.03	1	28.03	.04*
S/A	22029.97	28	786.78	
B (HW VS. TR)	150.51	1	150.51	.60*
AXB	1290.87	1	1290.87	5.12**
S/AB	7047.62	28	251.7	

SESSION 1 VS. SESSION 2

B (S #1 VS. S #2)	2172.4	1	2172.4	8.63***
S/AB	7047.62	28	251.7	

* NON-SIGNIFICANT

** $p < .05$

*** $p < .01$

TABLE 3

ANALYSIS OF VARIANCE SUMMARY TABLE
 HW VS. TR BY ORDER OF RECORDING METHOD
 MEAN NUMBER OF WORDS PER MINUTE
 TOTAL ELAPSE TIME

SOURCE	SS	df	MS	F
A (T-H VS. H-T)	.17	1	.17	.23*
S/A	21.01	28	.75	
B (HW VS. TR)	.54	1	.54	1.93*
AXB	1.65	1	1.65	5.89**
S/AB	7.84	28	.28	

SESSION 1 VS. SESSION 2

B (S #1 VS. S #2)	1.64	1	1.64	5.87**
S/AB	7.84	28	.28	

* NON-SIGNIFICANT

** $p < .05$ *** $p < .01$

TABLE 4

ANALYSIS OF VARIANCE SUMMARY TABLE
 SIMPLE EFFECTS ANALYSIS SUMMARY TABLE
 HW VS. TR BY ORDER OF RECORDING METHOD

MEAN NUMBER OF WORDS PER MINUTE
 TOTAL NUMBER OF WORDS

SOURCE	SS	df	MS	F
A	867.94	1	867.94	2.29*
(T-H VS. H-T)				
A vs. b1	243548.3	1	243548.3	.939†
(HW1 S/A HW2)	10619.64	28	379.27	
A vs. B b2	28244.74	1	28244.74	276.1***
(HW VS. TR)				
B AXB#1	2260.39	1	2260.39	2.55**
(HW1 VS. TR2)				
S/AB	2864.53	28	102.30	
B vs. a2	10761.6	1	10761.6	1.27*
(HW2 VS. TR1)				
SESSION 1 VS. SESSION 2				
S/AB	1505825	28	53807.4	
B	260	1	260	2.54*
(S #1 VS. S #2)				
NON-SIGNIFICANT				
S/AB	2864.53	28	102.30	
† p < .25				
* NON-SIGNIFICANT				
** p < .01				
** p < .05				
*** p < .01				

TABLE 5

SIMPLE EFFECTS ANALYSIS SUMMARY TABLE

TOTAL NUMBER OF WORDS

SOURCE	SS	df	MS	F
A at b1 (HW1 VS. HW2)	243540.3	1	243540.3	4.53**
A at b2 (TR1 VS. TR2)	99187.5	1	99187.5	1.77*
B at a1 (HW1 VS. TR2)	2924228.0	1	2924228	5.26**
B at a2 (HW2 VS. TR1)	70761.6	1	70761.6	1.27*
S/AB	1565826.02	28	55922.4	

* NON-SIGNIFICANT

** $p < .05$ *** $p < .01$

TABLE 6

SIMPLE EFFECTS ANALYSIS SUMMARY TABLE

TOTAL NUMBER OF ADJECTIVES

SOURCE	SS	df	MS	F
A at b1 (HW1 VS. HW2)	853.2	1	853.2	3.39*
A at b2 (TR1 VS. TR2)	1346.7	1	1346.7	5.35**
B at a1 (HW1 VS. TR2)	1732.8	1	1732.8	6.88**
B at a2 (HW2 VS. TR1)	589.6	1	589.6	2.34*
S/AB	7047.62	28	251.7	

* NON-SIGNIFICANT

** $\underline{p} < .05$ *** $\underline{p} < .01$

TABLE 7

SIMPLE EFFECTS ANALYSIS SUMMARY TABLE

MALE VS. FEMALE BY RECORDING METHOD

TOTAL ELAPSE TIME

TOTAL NUMBER OF WORDS

SOURCE	SS	df	MS	F
SOURCE	SS	df	MS	F
A at b1 (HW1 VS. HW2)	.4	1	.4	1.43*
A	59584	1	59584	.03*
TRA at b2 (TR1 VS. TR2)	1.4	1	1.4	5.00**
B	57818	1	57818	.68*
B at a1 (HW1 VS. TR2)	2.1	1	2.1	7.50**
A x B	23571	1	23571	.28*
B at a2 (HW2 VS. TR1)	.1	1	.1	.36*
S/AB	328362	28	38782.8	
	7.84	28	.28	

* NON-SIGNIFICANT

** $p < .05$ SIGNIFICANT*** $p < .01$ **** $p < .001$

TABLE 8

UNWEIGHTED MEANS ANALYSIS SUMMARY TABLE

MALE VS. FEMALE BY RECORDING METHOD

TOTAL NUMBER OF WORDS

SOURCE	SS	df	MS	F
A (TR VS. HW)	59884	1	59884	.63*
B (M VS. F)	57016	1	57016	.60*
A X B	23571	1	23571	.25*
S/AB	5306362	56	94756.5	

* NON-SIGNIFICANT

** $p < .05$ *** $p < .01$

TABLE 9

UNWEIGHTED MEANS ANALYSIS SUMMARY TABLE

MALE VS. FEMALE BY RECORDING METHOD

TOTAL NUMBER OF ADJECTIVES

SOURCE	SS	df	MS	F
A (TR VS. HW)	695.45	1	695.45	1.38*
B (M VS. F)	1059.15	1	1059.15	2.10*
A X B	1104.23	1	1104.23	2.19*
S/AB	28240.28	56	504.29	

* NON-SIGNIFICANT

** $p < .05$ *** $p < .01$

TABLE 10

UNWEIGHTED MEANS ANALYSIS SUMMARY TABLE

MALE VS. FEMALE BY RECORDING METHOD

MEAN TOTAL ELAPSE TIME MINUTE

SOURCE	SS	df	MS	F
A (TR VS. HW)	0.339	1	0.339	0.6*
B (M VS. F)	2.49	1	2.49	4.98**
A X B	0.04	1	0.04	0.08*
S/AB	28.13	56	0.502	

* NON-SIGNIFICANT

** $p < .05$ *** $p < .01$

TABLE 11

UNWEIGHTED MEANS ANALYSIS SUMMARY TABLE

MALE VS. FEMALE BY RECORDING METHOD

MEAN NUMBER OF WORDS PER MINUTE

SOURCE	SS	df	MS	F
A (TR VS. HW)	22120.39	1	22120.39	87.22***
B (M VS. F)	410.8	1	410.8	1.62*
A X B	0.62	1	0.62	0.002*
S/AB	14202.79	56	253.62	

* NON-SIGNIFICANT

** $p < .05$ *** $p < .01$

Responses To Phonological Description

Q: I feel the tape recorder was more distracting, because I'm very self-conscious about my voice, responses

about myself

Q: Were you trying to think of what to say all the time or was there a long silent space there would you

Hand written because sometimes I had to stop

train of thought

Q: Yes, I feel that the tape recording was much distracting. With a person, they can tell you to relax, they can ask if your done. A tape recorder says nothing having as nervous.

APPENDIX C

Q: Yes, written down, I had to stop every once in a while to let interviewer catch up.

Exact wording of subjects' responses has been approved previously.

* Responses* To Phenomenological Questionnaire

distracting because knowing that it was there and was

S# 1 I feel the tape recorder was more distracting, than because I'm very self conscious about my voice, responses, etc.. The tape recording was distracting. When you're

S# 2 Writing everything down broke my thinking & I had to repeat myself. like a letter ... that until it's over it is

S# 3 Each one had its drawbacks. On the handwritten one you had to go at a slow even pace and on the tape recorded one while you were trying to think of what to say all you could think of was what a long silent space there would be on the tape. because I would have to pause so he could write

S# 4 Hand written because sometimes I had to stop my train of thought. recorder, because I felt I had to come up

S# 5 Yes, I feel that the tape recording was much more distracting. With a person, they can tell you to keep going, or ask if your done. A tape recorder says nothing - letting making me nervous.

S# 6 Yes. Written - slow, I had to stop every once in a while to let interviewer catch up. feel like I was racing

S# 7 Yes. The recording session was more distractive, noting the fact that I was being put on tape. I felt more at ease telling my stories to the instructor.

54 10 Yes, the recording of me speaking often makes me

* Exact wording of subjects' responses has been preserved whenever possible. often sounds off over a recording which sometimes distracts my thinking.

S# 8 Yes, being tape recorded seemed to be more distracting because knowing that it was there and was recording what I said. It just seemed to scare me more than with it not being there.

S# 9 The tape recording was distracting. When you're taped it can be played over & over and analysed in more detail. It's like a letter in that until it's erased it is on file as to where a conversation in person or over the phone cannot. The taping catches & remembers bad grammar, nervousness & stuttering.

S# 10 The first one (hand written) was a little distracting because I would have to pause so he could write things down. The tape allowed me to keep talking.

S# 11 The tape recorder, because I felt I had to come up with a story quicker and I didn't have time to think while the tester was writing.

S# 12 I would say the tape recorder was more distracting, not because of being recorded, but because when it was hand written I had more time to think about what I was going to say, and the tape recorder made me feel like I was racing against time.

S# 13 The handwriting was slower so I would stop and wait for the writer to catch up.

S# 14 Yes, the recording of me speaking often makes me feel if though I must give more intelligent answers. I also feel that my voice often sounds odd over a recording which sometimes distracts my thinking.

S# 15 Recording - because I hate my voice on a recording & my stories are always told too long.

S# 16 Yes. Tape Recorder - because you feel like you have to hurry up & say something because it's waiting on you.

S# 17 Handwriting was distracting because of the time it took for him to write down what I said. But while waiting for him to catch up, I could think of something else to say. Gave me more time to think but when I did think of something, sometimes I was interrupted by having to wait.

S# 18 It was easier for me to "answer" the responses to the hand written test because I had more time to organize my ideas about the topic.

S# 19 Yes, the hand writing kept me from saying my thoughts as they came to my mind. I was much more conscious or weary of what I was saying when I watched someone else write down what I said.

S# 20 No.

S# 21 Neither was distracting. However I felt it was easier to keep a flowing train of thought when being recorded, because I was not concerned with going too fast for the writer.

S# 22 No.

S# 23 Tape recording. It had all come out clear and clean whereas the hand written, you could pause and think of what you were going to say.

S# 24 The hand written was more distracting because I would lose my train of thought and would be more conscious

of the experiment. In the tape recording I felt more at ease and could relate to the experimenter easier.

S# 25 The writing; had to slow down now and then.

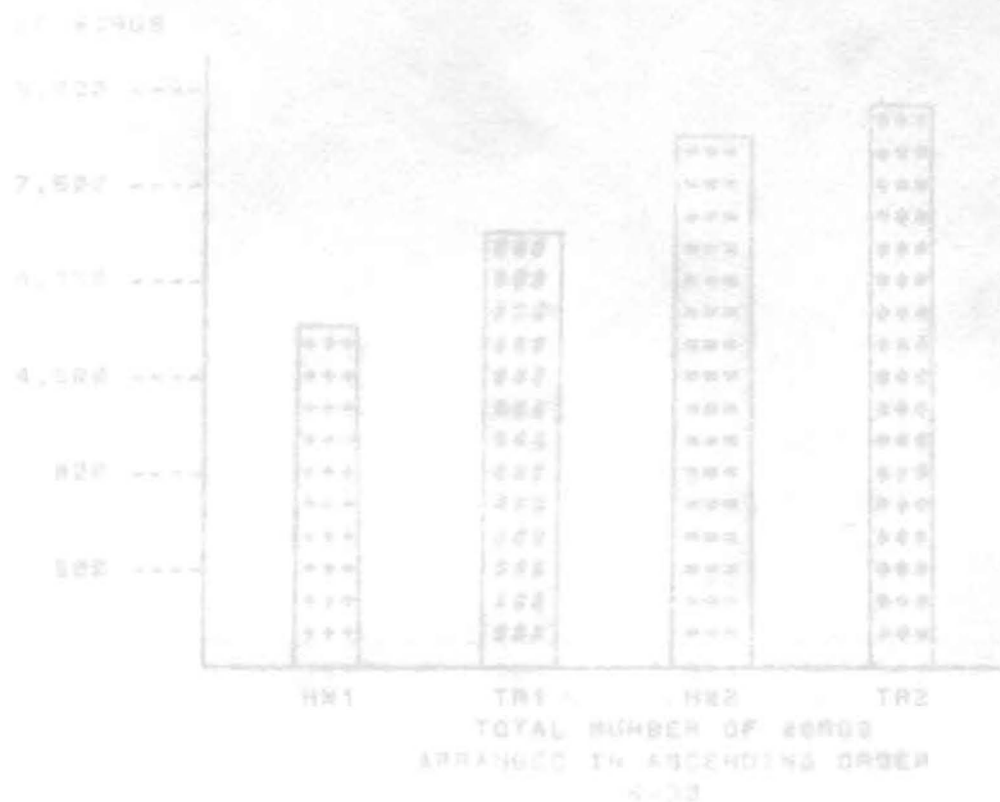
S# 26 It was a little easier to do the handwritten because it seemed more personal. I'm not used to talking a lot into tape recorders but it always makes me a little bit more nervous.

S# 27 No. I liked the time I had to think in the handwritten experiment but it took longer and the instructor had to do a lot of writing so the tape recorded experiment would have been easier.

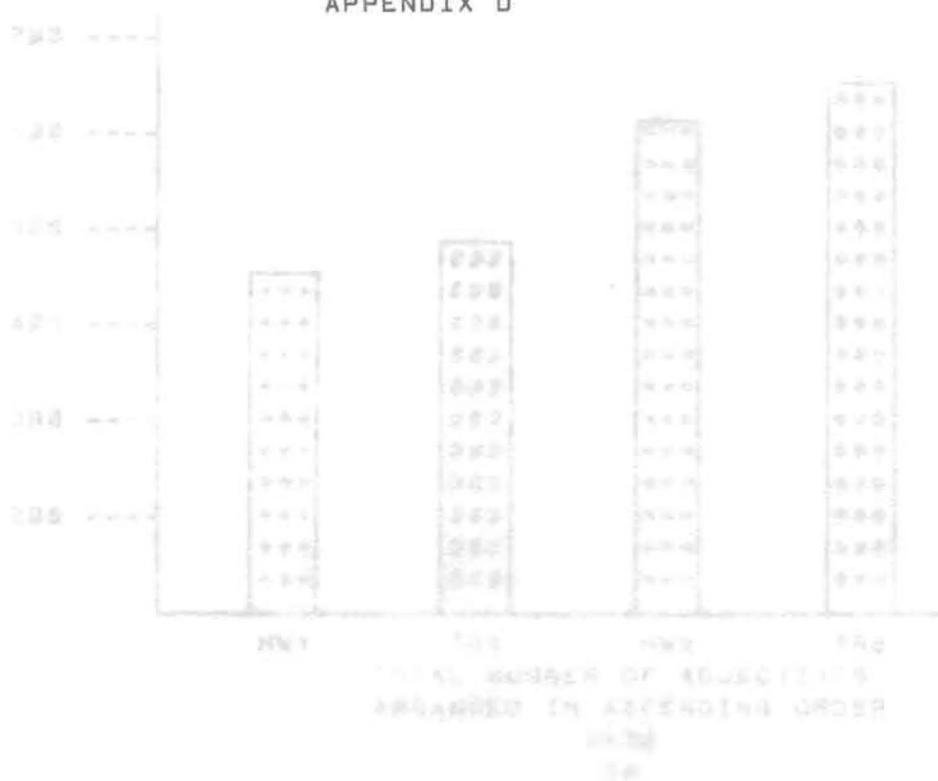
S# 28 The hand-written was because I would have to slow down my answer for the recorder which would cause a break in my train of thought.

S# 29 Yes. Tape Recording. The tape recorded experiment made me feel less at ease. I felt pretty stupid about what I was saying. I just wanted to hurry & say something & get it over with. The hand written was the 2nd experiment & I felt more comfortable and could let my mind go more easily.

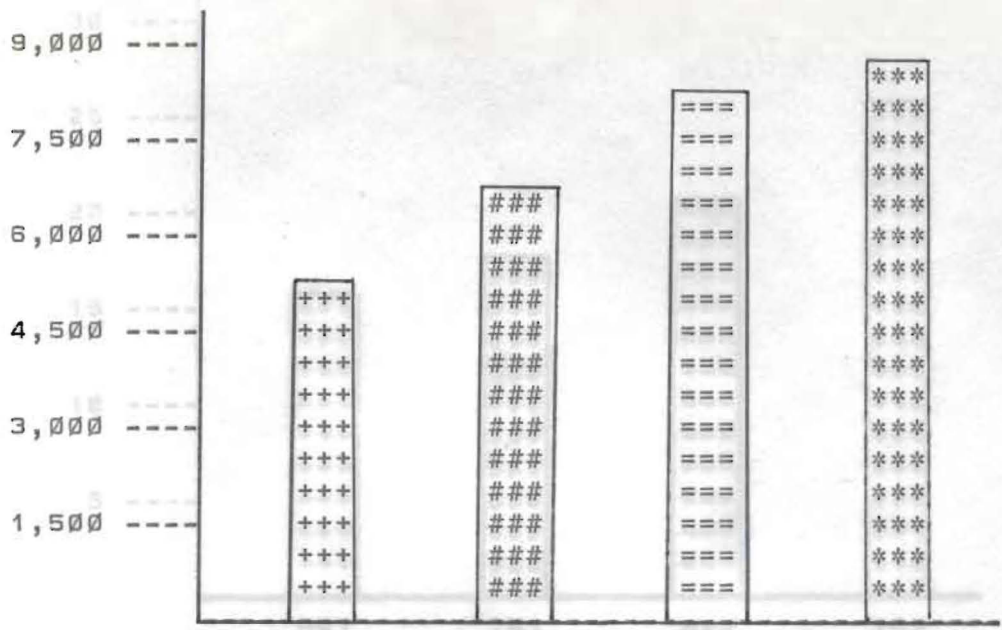
S# 30 Yes, the tape recorded one made me more nervous. I kept thinking about being taped and the machine made noise. It didn't seem to be as comfortable a setting than just having 2 people in a room.



APPENDIX D

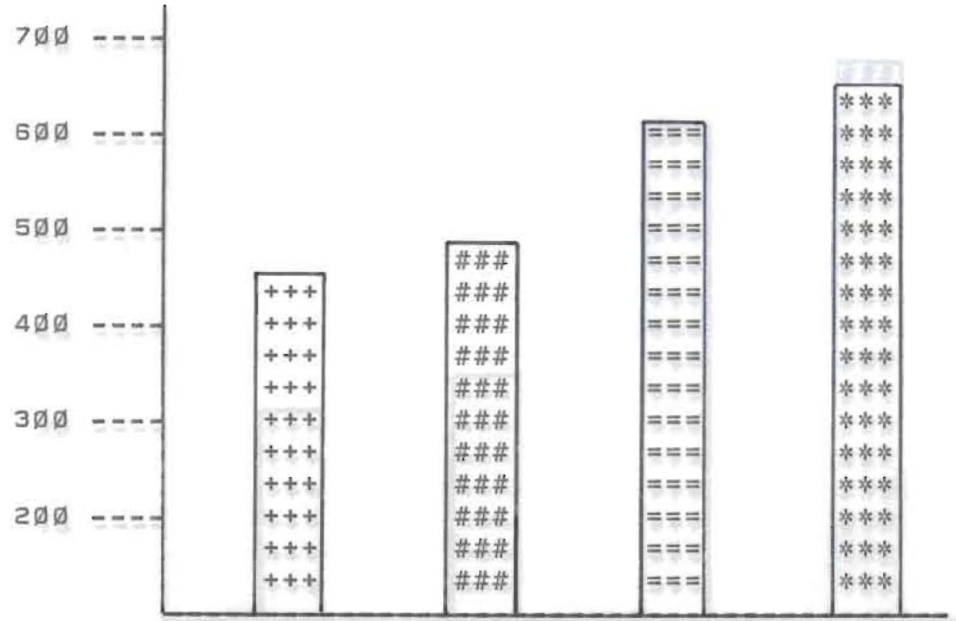


OF WORDS



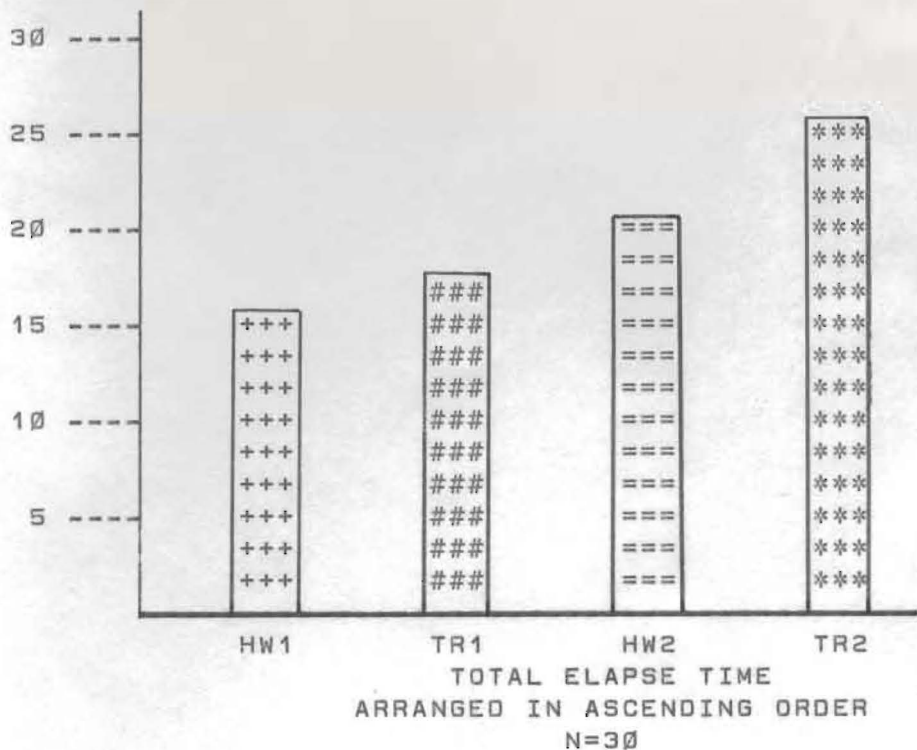
HW1 TR1 HW2 TR2
 TOTAL NUMBER OF WORDS
 ARRANGED IN ASCENDING ORDER
 N=30

OF ADJECTIVES



HW1 TR1 HW2 TR2
 TOTAL NUMBER OF ADJECTIVES
 ARRANGED IN ASCENDING ORDER
 N=30
 50

OF MINUTES



WORDS PER MINUTE

