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A New Method for Studying Variables Controlling Television Viewing

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A New Method For Studying Variables Controlling Television Viewing

by

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Diana Reda

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The intent of this research was to investigate the factors controlling viewer attention to television. Of prime concern was the effect that duration of audio and visual stimulus exposure has on the amount of time the viewer will spend watching the screen, and the development of a method in which to best study this effect.

One of the principle aims of television is to maintain the viewer's orientation towards the screen. What he sees on the screen must be reinforcing enough to sustain this viewing behavior throughout the length of the program. A review of the literature concerning television viewing revealed that emphasis is concentrated on the effects of content on looking behavior. Although content may be an important factor governing viewing, other factors not directly related to content also have a strong effect on the viewer's looking behavior. Some programs by the nature of their content are not considered highly interesting by the general audience. Klein (1971) states that viewers insist that they want to see programs on television with more important content, such as public affairs. Yet when public affairs is on, viewers usually find it "too objectionable", as Klein puts it, as compared to the entertainment programs opposite it. Given the content to be shown, the producer must present it in a manner

which will attract and maintain the largest audience possible. The crucial variables, then, are those that can control the viewer's response of looking at the screen regardless of the actual content. What is most important, therefore, to the people of the television industry is developing effective means of keeping the viewer in front of his television. This does not necessarily demand the production of quality content. It can be achieved by the proper manipulation of variables. Reinforcement derived from audio and visual stimuli can be effective in maintaining the desired response. Even in cases in which the conveyance of information is the ultimate goal, as in educational programs, this purpose is defeated unless these stimuli provide adequate reinforcement for the evoking and maintaining of the viewer's looking behavior.

Some preliminary work in the area of effectiveness of visual stimulation was done by Butler (1953; 1954) and Butler and Harlow (1954; 1957). These studies indicate a difference in the reinforcing strength of various visual stimuli by changes in response rates. They found that monkeys in a light-tight test cage would quickly learn a color discrimination in which the correct response opened a door allowing a 30-second view of the laboratory. Response rates showed a difference in rein-

forcing effectiveness of stimuli alternately available in the environment in the following order (from most to least reinforcing): 1) a monkey in another cage, 2) a moving electric train, 3) an array of food, and 4) an empty table top surrounded by black cloth screening. These data suggest that those offering the monkey the greatest degree of audio and visual stimulation, provided by continually changing sound and visual patterns of a monkey and a train, were the most reinforcing.

These studies indicate that the reinforcing effect of television may be related somewhat to sensory reinforcement. In a review of "Sesame Street", Ulrich (1970) suggests that certain physical properties of stimuli are largely responsible for the sustaining of the viewer's looking response. Stimuli which are big, colorful, fast-moving, and rather complex tend to attract more eyes to the television than simple, bland stimuli. "Sesame Street" makes use of this technique when "it presents a big R and when it flashes numbers on the screen in psychedelic patterns".

Through casual observation, it was noted that certain elements frequently present in instructional programs are associated with low rates of looking behavior in the student viewer. These elements include graphs, diagrams, interviews, and monologues. Such

factors offer the student a very minimum of visual reinforcement, thereby bringing about a drop in looking behavior. These low rates of looking behavior are decreased still further, however, as a function of duration of presentation. The longer the uninterrupted presentation of the graph, diagram, interview, or monologue, the less reinforcing it becomes. Reinforcing power of a stimulus is greatest immediately upon presentation. As exposure time increases, the reinforcing strength of the stimulus is gradually lost. It appears, then, that novel stimuli provide the greatest reinforcement. Berlyne (1960) contends that novelty is the overriding stimulus characteristically eliciting the orientation reaction, or the looking response.

The reinforcing effectiveness of visual and auditory stimuli in video-tapes could be maintained with the use of a number of frequently interchanging camera angles and brief speaking segments. Video-tapes, therefore, composed of varied camera angles showing an image only a matter of seconds before changing and of short, fast-moving individual speaking segments would produce a high rate of viewer looking response. This seems to be the principle followed by the highly successful nighttime television talk shows.

It has been found that a program can be rated

as to its reinforcing value by measuring the looking behavior it generates in the viewer. Lindsley (1962) devised a behavioral method whereby commercials could be judged as suitable or not for television presentation. The subject was placed in a small room with a television monitor and a response button which controlled the brightness of the picture and operated on a conjugate schedule of reinforcement. On such a schedule, the brightness of the screen was contingent upon the rate of response. High responding maintained a bright picture; low rates faded out the picture. With this technique, reinforcing commercial segments indicated by high response rates could be distinguished from minimally reinforcing portions indicated by little or no responding. Momentary changes in looking behavior are recorded by fluctuations in response rates.

A method of measuring looking behavior similar to Lindsley's was used by Reeves (1970) to measure the attention of children to television programs. In this case, however, the viewer's looking behavior was observed and recorded continuously and mechanically by the experimenter. The dependent variable observed by the experimenter was "eyes on the television set". A similar measure of behavior can be obtained by observing and recording the response of "eyes on the television set" once

every minute. This means provides an accurate, moment-to-moment record of the viewer's changes in looking behavior.

STUDY 1

The frequency of auditory and visual image change on the television screen may, to a great degree, determine the reinforcing value of the program. Commercial television makes use of effective methods of controlling viewer attention to the screen regardless of actual content of the presentation. The nature of television commercials necessitates that the viewer's attention be drawn and maintained by what he sees on the screen. Study 1 sought to investigate these attention-holding techniques as employed in popular television programs and commercials.

METHOD

"The Tonight Show", cartoon programs and various television commercials were tested for the occurrence of the independent variables under study. They were chosen because of their popularity as attention maintaining programs. Programs were viewed over a 23-inch television. A clock with a second hand was used to time the frequency of stimulus change during the programs.

The segment measured on "The Tonight Show" was the first five minutes of interview following the monologue. During this period, the amount of time each

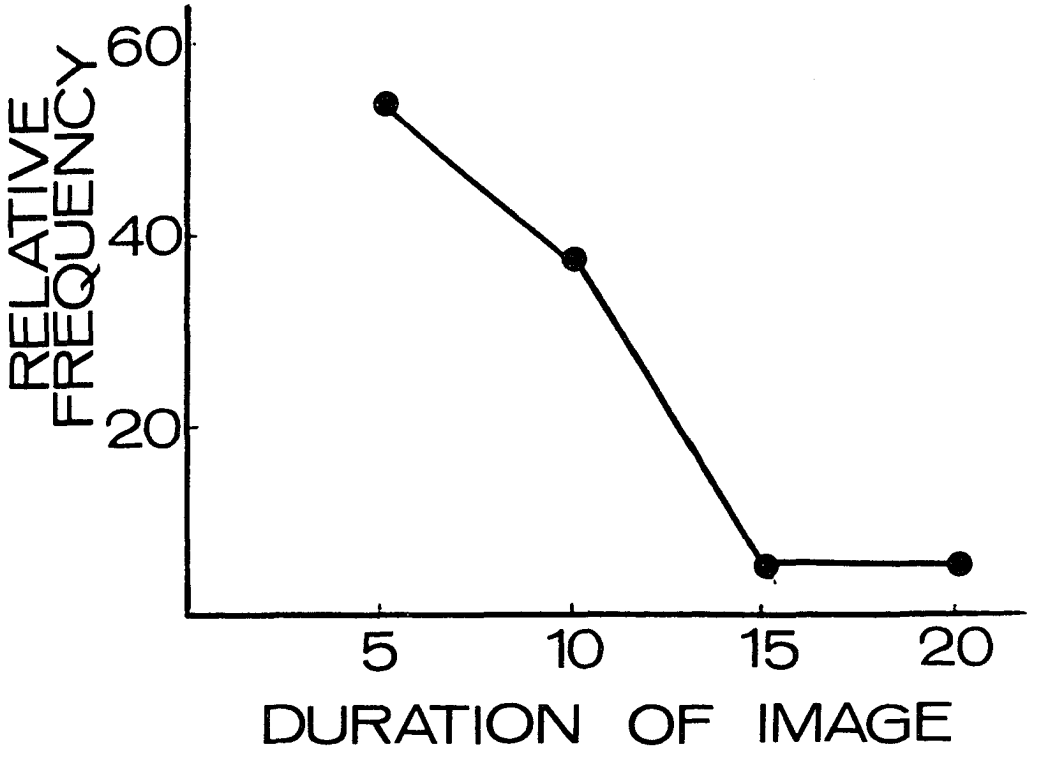
visual image was on the screen was measured and recorded. Visual image change consisted of shifting camera angles although remaining on the same character or object and shifting of camera direction from one character or object to another.

In measuring visual change during commercials and cartoons, the length of the presentation was timed and the number of visual image changes were counted. From this data, the mean duration of visual stimulus exposure was determined.

RESULTS AND DISCUSSION

The data obtained from "The Tonight Show" are presented in Figure 1. Visual images lasting for five seconds occurred with a frequency of 53%. Frequency decreased to five percent for 15-second exposures. Twenty-second exposures also occurred with five percent frequency. The median duration of visual images was five seconds. This rapid change of visual stimuli provided a maximally reinforcing visual pattern. Visual stimuli were changed while they still retained most of their reinforcing qualities. In this way, loss of the looking response caused by loss of reinforcing effectiveness of visual stimuli is improbable. Reinforcement remains high carrying the viewer's orientation through-

Fig. 1. Relative frequency of length of image exposure during sampled segment of "The Tonight Show".



out the presentation.

Rapidly paced auditory changes are also maintained. Individual speaking segments are very brief, rarely exceeding 15 seconds. Persons attempting to speak for a longer period are usually interrupted by the host or another guest. Both visual and auditory stimuli are switched frequently enough to keep looking behavior high. The result of these manipulations is a quickly paced program maintaining the viewer's eyes on the screen by continuously presenting novel sound and image stimuli.

The mean visual image change obtained over a sample of six commercials was 2.9 seconds. In commercials there is an almost incessant change in what is on the screen. During the usual 30-second commercial, the picture on the screen changes approximately 10 times. The purpose of their presentation, the selling of a product, demands that the viewer's eyes remain fixed on the television and not be directed elsewhere at its onset. In order to keep the viewer's eyes on the screen, the commercial is designed to bombard him with effectively reinforcing visual patterning. Excellent examples of this successful programming are the Pepsi commercials.

The mean visual image change in cartoons was found to be four seconds. Reeves (1970) found that the

attention level of children is near maximum during commercials. To reproduce this response in children's entertainment, cartoons must duplicate the factors effecting this high rate of response. This, then, necessarily involves the brief exposure of visual stimuli. Since children are often said to have a short attention span, the loss of the reinforcing value of stimuli as a function of exposure time may be intensified with children. The same principle holds true in relation to the length of spoken segments. Like adults, children tend to respond more to how material is presented rather than the actual content of the material itself.

In summary, data obtained from notably high attention maintaining television programs indicate the presence of briefly presented audio and visual stimuli as essential for sustaining a high level of viewer looking behavior.

STUDY 2

Study 2 sought to determine the reinforcing value of three educational video-tapes by measuring the moment-to-moment changes in looking behavior of viewers. Visual stimulus duration was also measured during each tape. The two measures could then be compared to determine if increases in viewing behavior were a function of decreased stimulus durations.

METHOD

Subjects:

Eighty-seven students enrolled in an Introductory Psychology course at Western Michigan University served as subjects. They were divided into three groups. Two groups, containing a combined 64 students, viewed the video-tapes during classtime. The other group, of 23 students, viewed the tape on a volunteer basis outside of classtime. They had signed a list and were given bonus points towards their course for participating. One tape was shown to each group but students were allowed to take part in more than one group. Subjects ranged in age from approximately 18 to 25.

Apparatus:

An Ampex VR 5100 recorder was used to transfer

three films to one-inch 3M video-tapes. The films used are professionally produced, commercially available educational films but since it is not the purpose of this study to present a critique on the films, their titles will be withheld. The tapes were broadcast from the campus television studio and shown over Magnovox, 23-inch screen television monitors.

A clock with a second hand was needed to measure one-minute intervals for recording subjects' behavior during viewing. Data sheets were used to manually record the behavior.

Procedure:

The Ss were seated in a semi-circle around the monitor situated against the front wall. All Ss had a clear view of the screen from their seats. The E sat to the left of the monitor and could observe every S. Shortly before each of the three tapes began, the Ss were given the following verbal instructions:

> In a few minutes a video-tape will begin. You will not be responsible for the material presented and will not be quizzed over it. You are not required to watch the tape if you do not wish. You may sleep or study instead but please do not talk or leave the room. The only book you may read is your text. I will be recording your behavior during the course of the tape.

The text they were allowed to read was their book for their psychology course, which they all had with them.

Any questions Ss had were then answered.

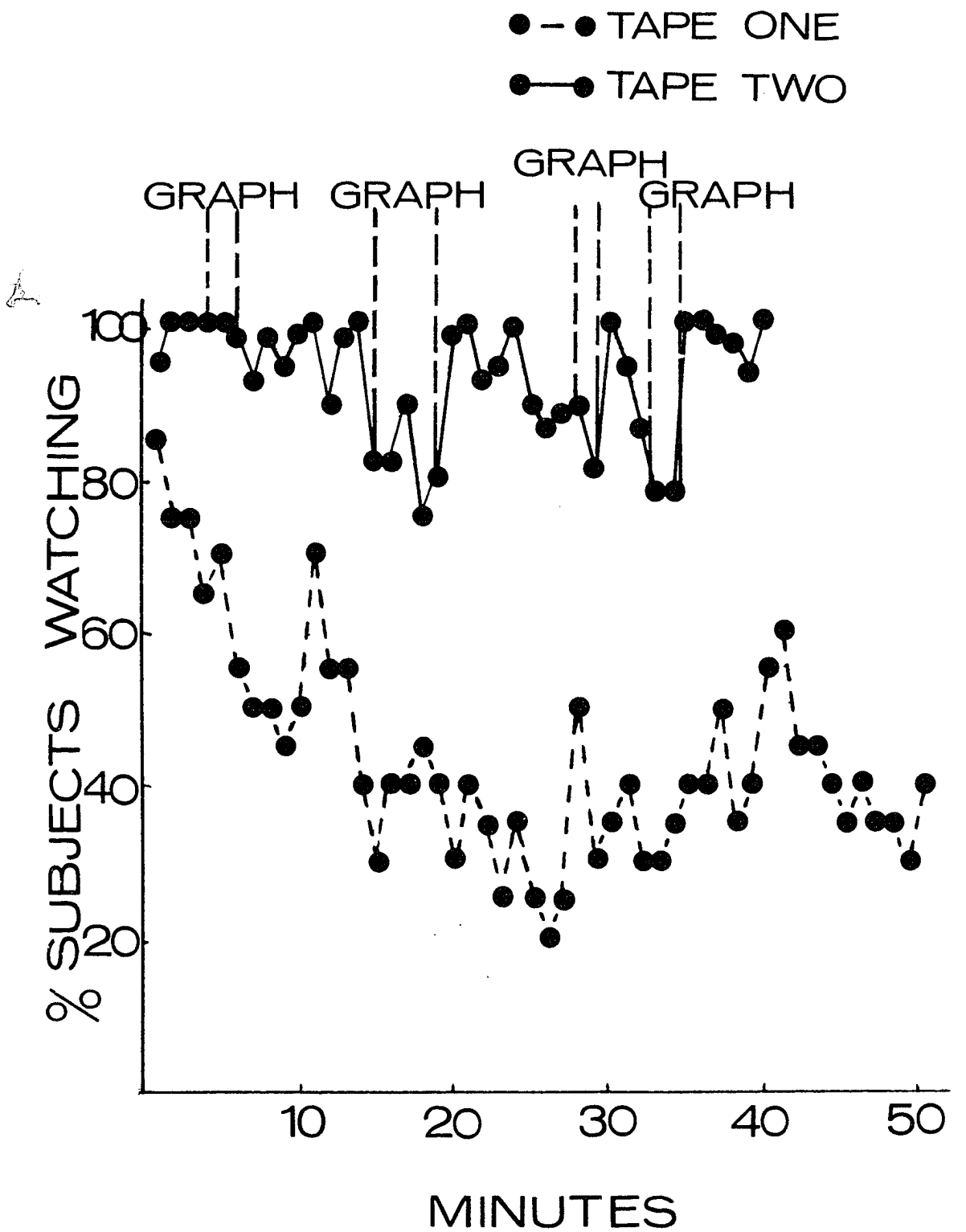
The method of recording was the same for all presentations. With the start of the video-tape, one-minute intervals were timed. Once during every interval, E glanced at each S and recorded whether or not his eyes were on the television screen. This procedure was continued to the last minute of the tape after which the Ss were thanked and dismissed from class.

RESULTS AND DISCUSSION

The results of tape one, a 50-minute interview, showed an overall low rate of looking behavior while tape two, a 40-minute demonstration of teaching verbal behavior to psychotic children, showed a high rate. Of the 23 Ss who saw tape one, there was a low of 20% of the Ss watching during the 26 minute and a high of 85% during the first minute. During the rest of the tape, watching fluctuated between 25% and 75%. Among the 36 Ss who saw tape two, looking responses varied between 75% and 100%. These results are shown in Figure 2. As indicated, the presentation of graphs on the screen during tape two are correlated with a decline in attention among Ss, with the exception of the first graph.

There were large variations in the amount of

Fig. 2. Percentage of subjects looking at the television during each minute of tapes one and two.



time Ss spent watching the monitor during tape one, as seen in Figure 3. Attention rates ranged from 20% of the Ss watching 0 to 10% of the time, and 10% watching 91% to 100%.

As indicated in Figure 4, 78% of the Ss watched from 91% to 100% of tape two. None of the Ss watched less than 61% of the tape.

Twenty-eight Ss viewed tape three, a 22-minute tape concerning animal aggression. Figure 5 shows the amount of orienting behavior during this presentation. A very high overall rate of looking at the screen was sustained throughout the major portion of the tape. As indicated, the low points in attention are correlated with minutes of explanation by the narrator.

Figure 6 presents the amount of time Ss spent watching the screen. Eighty-nine percent of the Ss watched between 91% and 100% of the tape and 11% watched 81% to 90%. No S watched less than 81% of the tape.

To compare the three video-tapes in relation to duration of visual images on the screen, a sample of the first 18 consecutive image changes were selected from each tape. The length of time the images were exposed was determined for all three samples. The distribution in Figure 7 demonstrates the frequency of various exposure times for each sample. Tapes two and

Fig. 3. Amount of time every subject spent with "eyes on the television screen" throughout tape one.

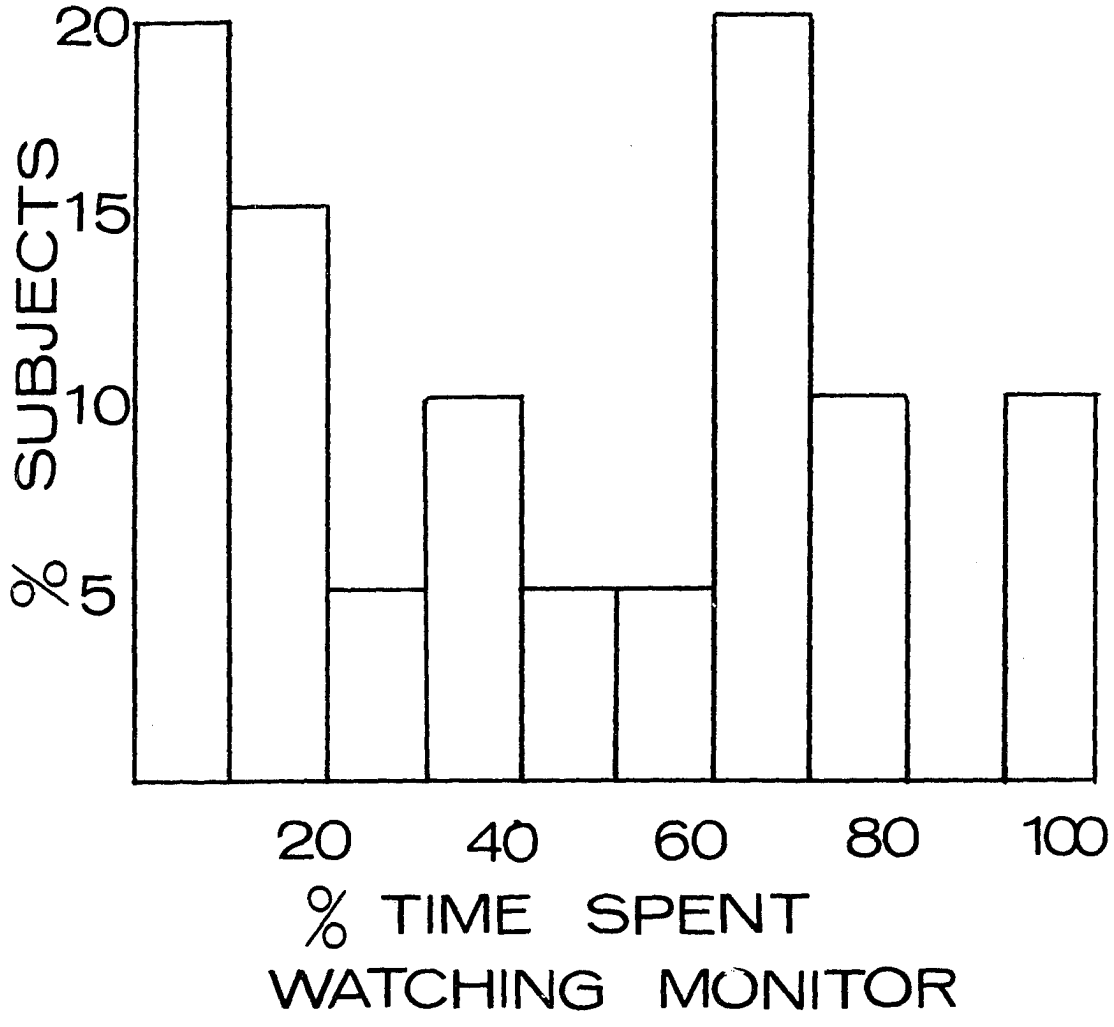


Fig. 4. Amount of time every subject spent with "eyes on the television screen" throughout tape two.

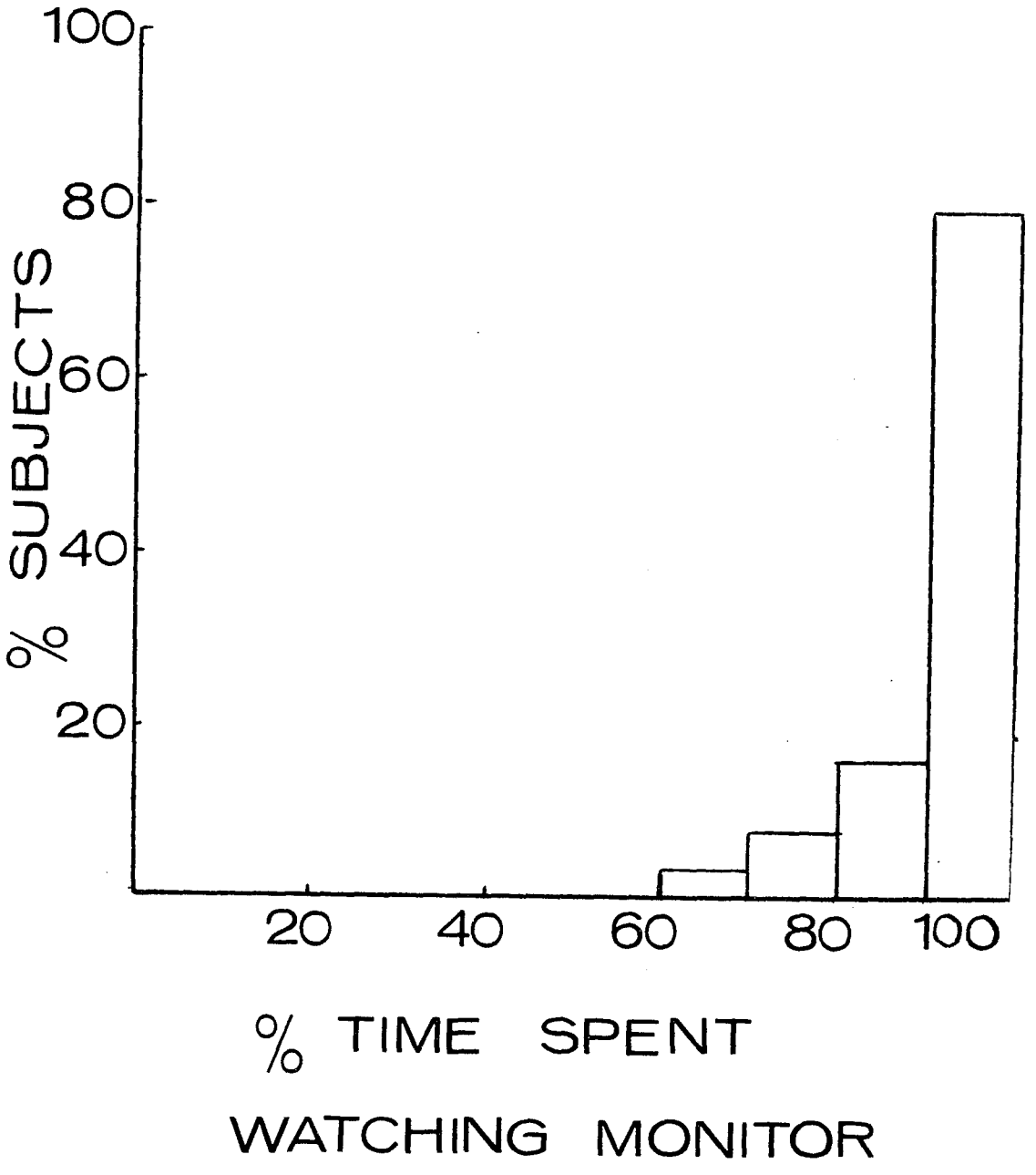


Fig. 5. Percentage of subjects looking at the screen during each minute of tape three.

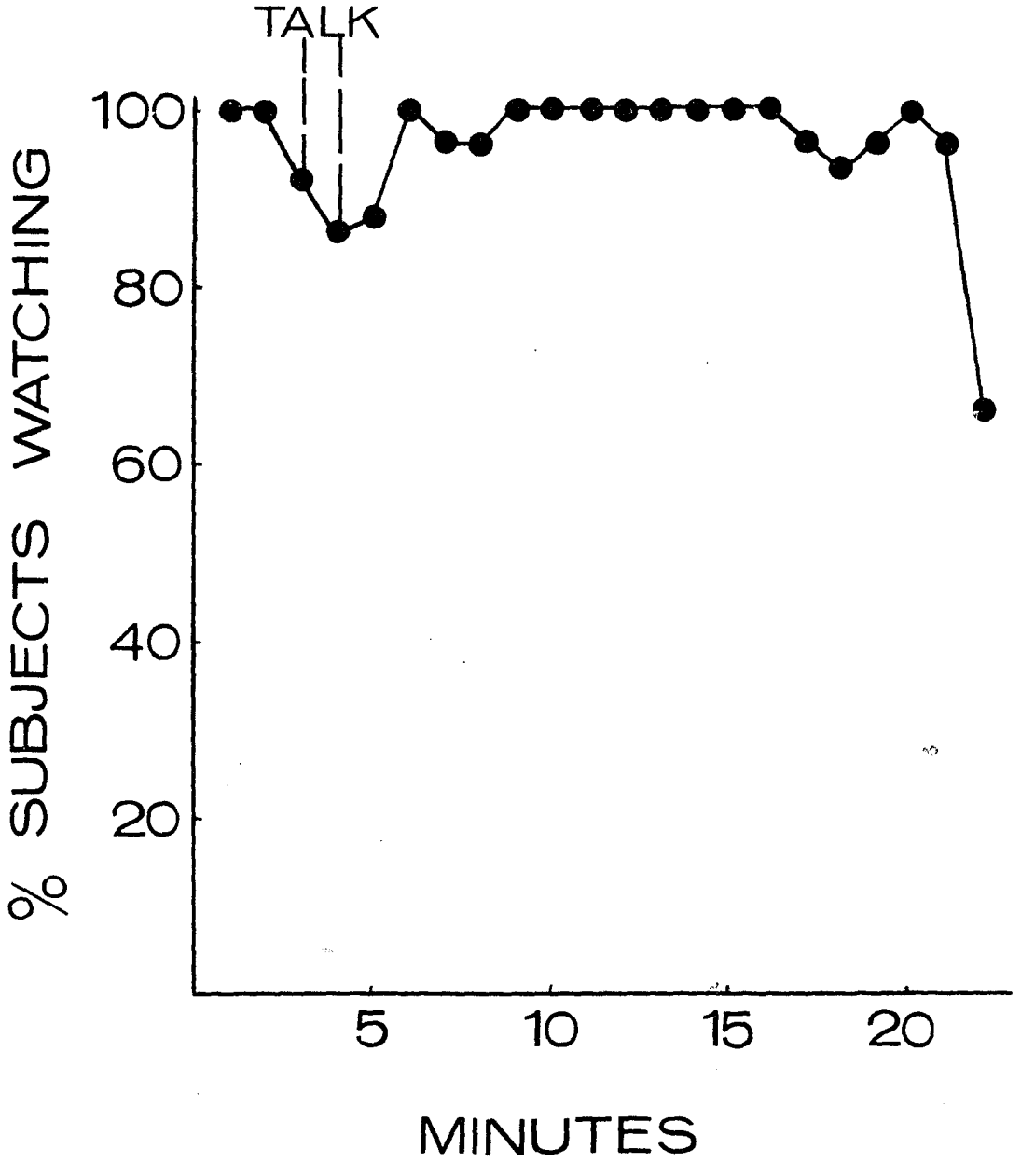


Fig. 6. Amount of time each subject spent with "eyes on the television screen" throughout tape three.

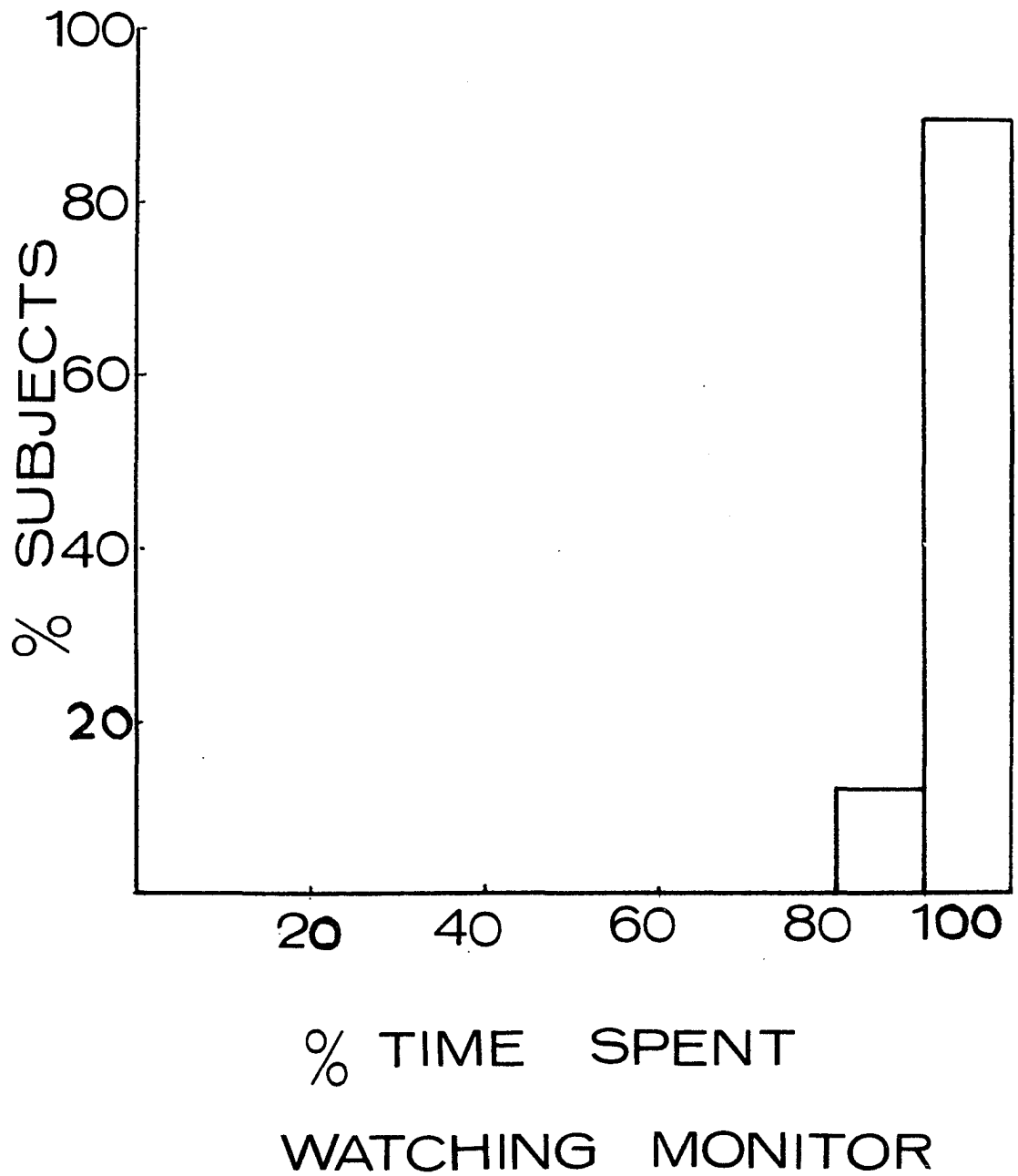
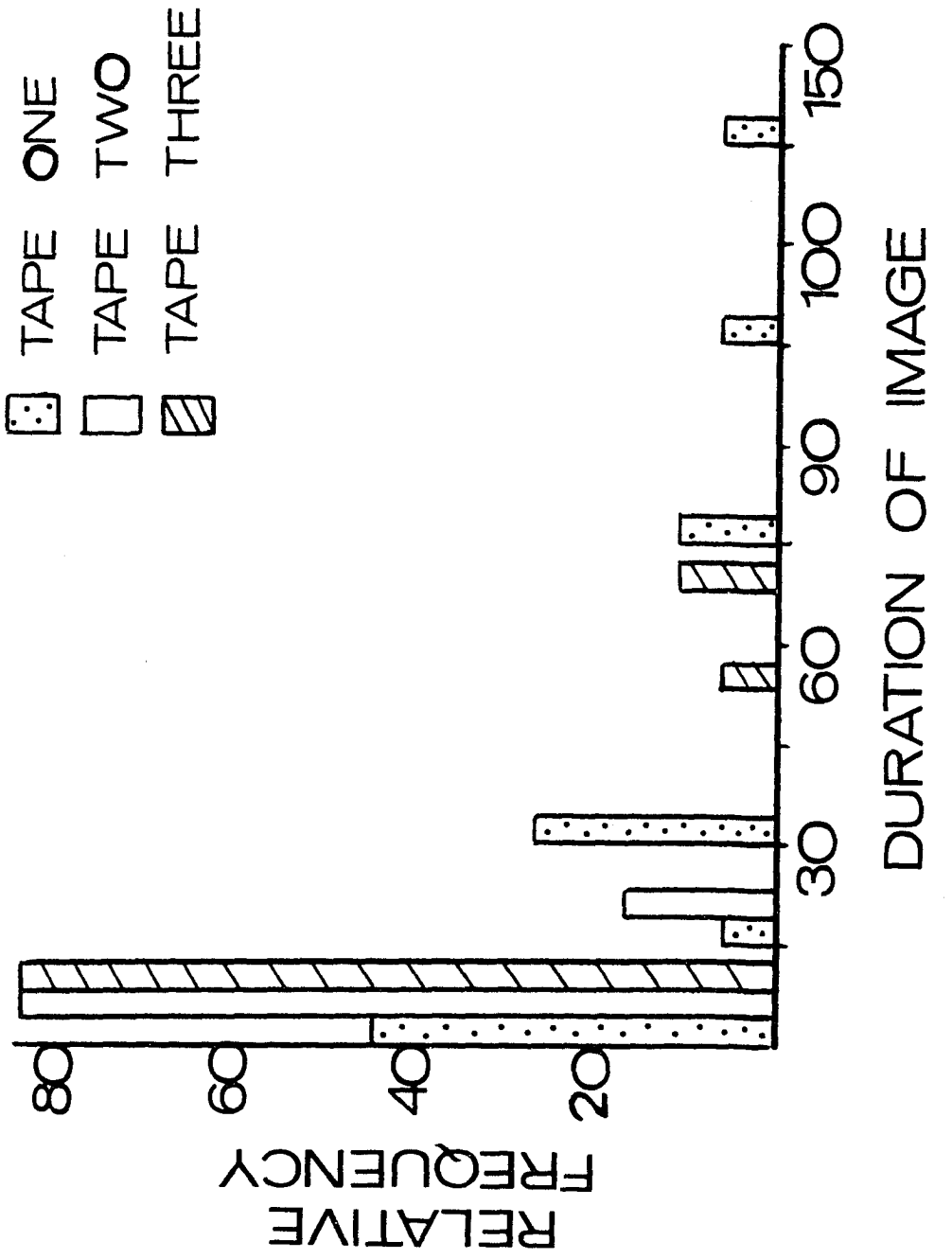


Fig. 7. Relative frequency of lengths of image exposure on tapes one, two, and three.



three presented the shortest image exposures with 83% of the images appearing for a duration of 0 to 15 seconds. The longest exposure for tape three was 61 to 75 seconds for 11% of the images. The longest duration for tape two was between 16 and 30 seconds for 17% of the stimuli. A wide difference in exposure times was employed in tape one, ranging from 0 to 10 seconds for 44%, to 136 to 150 seconds for 6% of the visual stimuli.

These data concerning duration of exposure for the three video-tapes are consistent with the data on the amount of looking behavior per tape. Tapes two and three, which maintained high levels of looking, were also found to present visual images for the shortest amounts of time. Frequent camera shifts did not allow for prolonged display of images on the screen, thus retaining the reinforcing value of each visual stimulus. As a result, the overall visual stimulation is maximally reinforcing.

During the two segments of narration, at the beginning and end of tape three, looking at the screen decreased. Although camera angles were changed during these segments, the speaker was the sole character presented. For example, during the first segment, visual exposures had a mean of 38 seconds throughout the two

and one-half minutes of uninterrupted narration. A reduction of both visual and auditory stimuli, because of the increased duration of each, corresponded to a decline in looking. These stimuli did not offer sufficient reinforcement for the maintenance of the looking response. When duration of stimulus exposure decreased, reinforcement increased and Ss again oriented toward the screen. When the narrator again came on the screen during the last one and one-half minutes of the tape, the camera remained on him for the full 90 seconds without change. At this point, looking dropped to 66%.

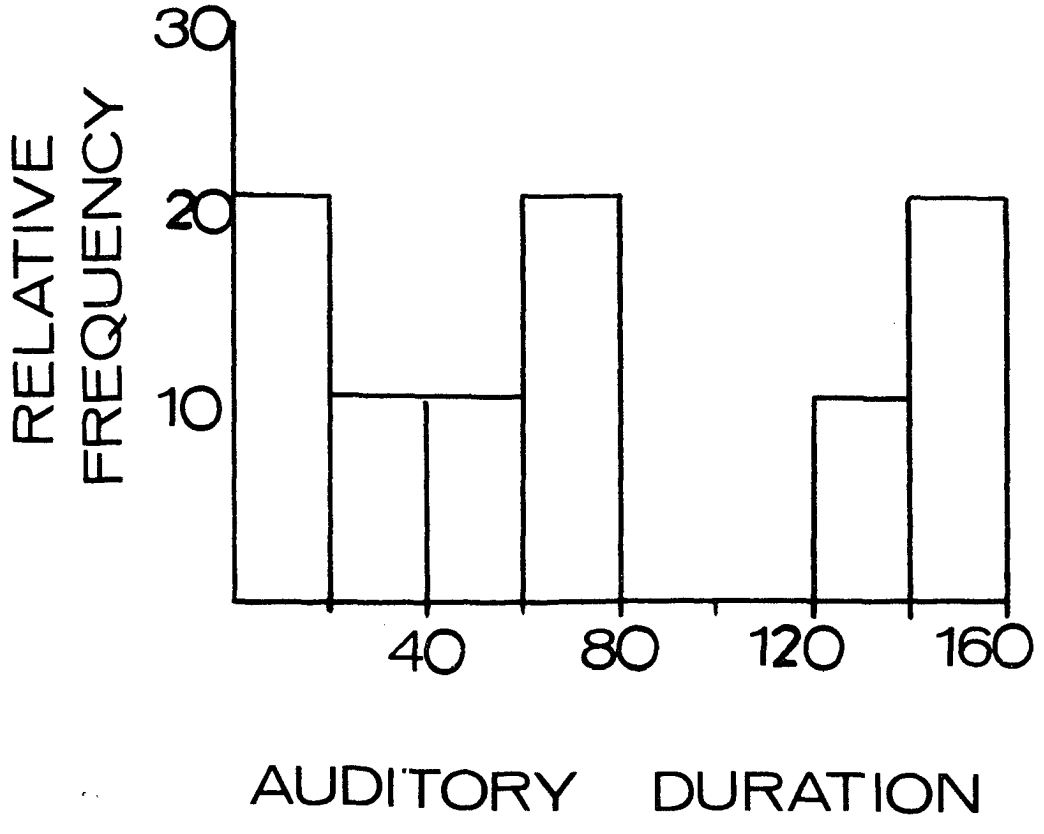
The long periods of camera fixation in tape one is related to the generally low level of looking behavior. The lengthy exposure of visual stimuli lowered its reinforcing effectiveness and weakened the response of looking. With minimal reinforcement coming from what is on the screen, there is an increased probability that the viewer will orient towards some more reinforcing stimuli in his environment. These lengthy visual images coupled with extended verbiage of one character produced inadequate reinforcement for sustained looking responses. Interview situations offer a minimum of visual and auditory stimulation. Two characters are presented in a repeating format of questions and, usually lengthy, answers. This recurring design becomes

monotonous, resulting in the habituation of the orientation response (Tecce, 1970). Because of the regular, repetitive presentation and long duration of stimuli, there is a reduction in reinforcing power and a weakening of the response. Although the speakers' statements are not repeated, the viewer becomes satiated with the regular audio-visual pattern. According to Back (1963), redundancy is likely to lead to low prominence, or a low reinforcing strength as compared to other stimuli in the viewing environment. It becomes a reassuring background to which the viewer does not have to attend.

The duration of auditory stimuli was measured over the same sample of tape one as the visual durations and is presented in Figure 8. The mean length of a character's uninterrupted speech was 1.3 minutes. Fifty-five percent of the audio presentations had a duration of greater than 71 seconds. Rather than employing frequent camera shifts to compensate for this repetitive pattern, camera changes were infrequent and followed closely with the speaker changes. Shorter image durations could be used as an effective means of orienting and maintaining the subject's "eyes on the television".

Reeves (1970) found that rapidly paced programming evokes a higher degree of looking behavior among

Fig. 8. Relative frequency of lengths of auditory stimuli during sample of tape one.



children than do slower paced programs. This point can be applied to adult viewers as well as to children. Slow-moving programs, in terms of audio and visual stimuli available, present a minimum of reinforcing stimuli while fast-moving programs offer a considerable amount of reinforcement.

STUDY 3

Study 3 was designed to confirm the results on two of the tapes from Study 2, one maintaining a high rate of looking behavior and the other maintaining a low rate, by combining sections of both tapes in an alternating fashion. In this way, each subject serves as his own control thereby eliminating subject-to-subject and day-to-day variability. Responses to segments of both tapes could be measured with the same subjects and during the same session.

METHOD

Subjects:

Fifteen students enrolled in an Introductory Psychology course at Western Michigan University viewed the video-tape on a voluntary basis. Each subject received three bonus points towards his course for participating. None of the subjects had seen either tape one or tape two described in Study 2. Subjects had an approximate age range of 18 to 25.

Apparatus:

An Ampex VR 5100 recorder was used to transfer segments of tape one and tape two, from the previous study, to a new tape. All other apparatus used was the

same as that described in Study 2.

Procedure:

The video-tape was made from a combination of tapes one and two from the previous study. Results of tape one, showing a low overall rate of attending behavior, and tape two with a high overall rate, were graphed. Five five-minute segments of tape one were alternately combined with five five-minute segments of tape two in which at least 90% of the Ss had watched. Segments were cut carefully so that no speaker was interrupted in mid-sentence. This sometimes caused a segment to be just under or over five minutes. The result was a 49-minute video-tape which alternately shifted from one origional tape to the other approximately every five minutes. This tape was then shown to the Ss with the same procedure as that used in Study 2.

RESULTS AND DISCUSSION

The looking behavior of the Ss during alternating segments throughout this tape is presented in Figure 9. Looking consistently decreases with tape one segments and increases with tape two segments.

The amount of time the 15 Ss spent watching segments of tape one, the interview, and segments of tape two, with the psychotic children, are shown in Figure 10.

Fig. 9. Percentage of subjects with "eyes on the television screen" during each minute of the tape. The alternating segments of tapes one and two are indicated. Horizontal lines indicate medians.

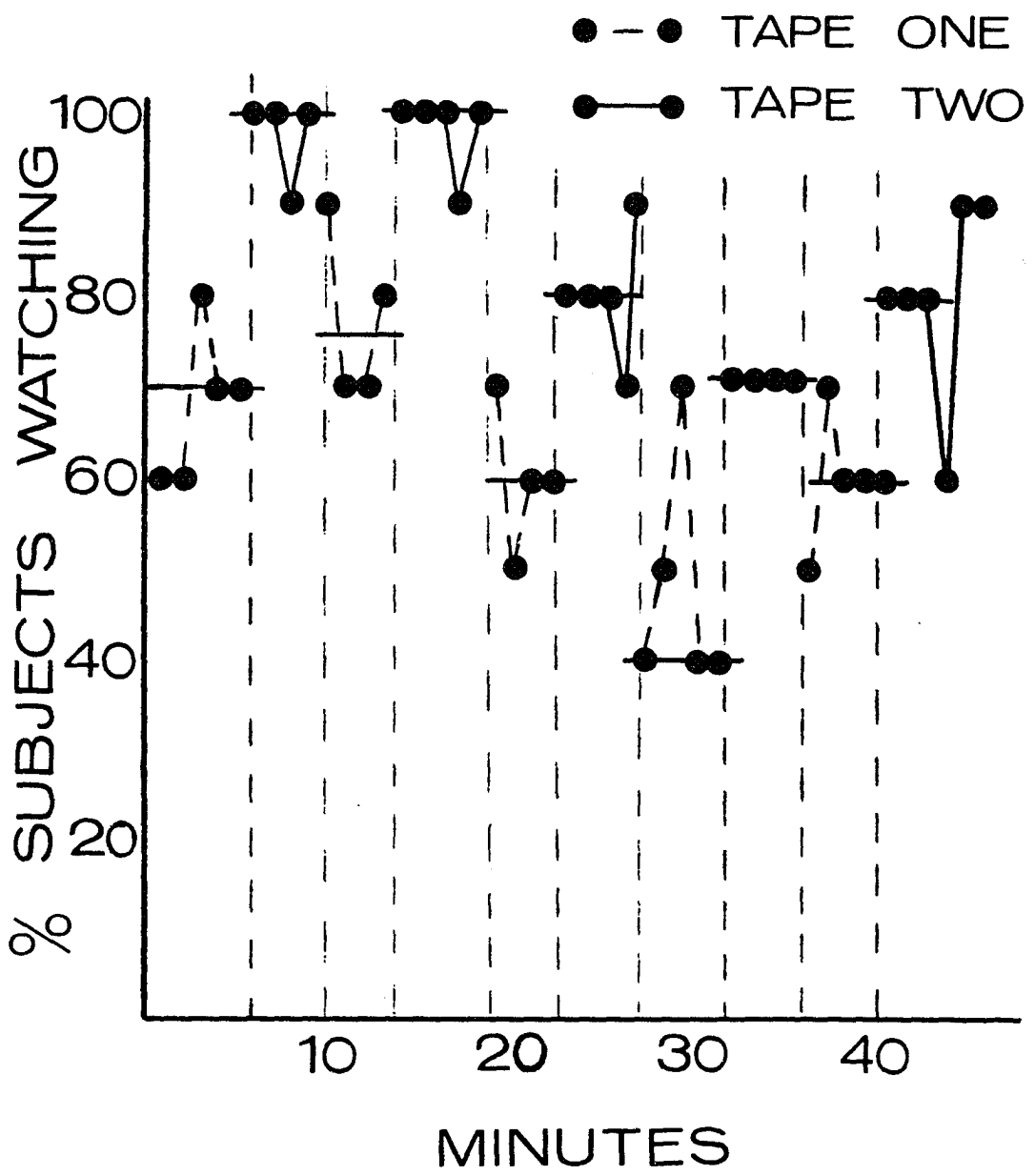
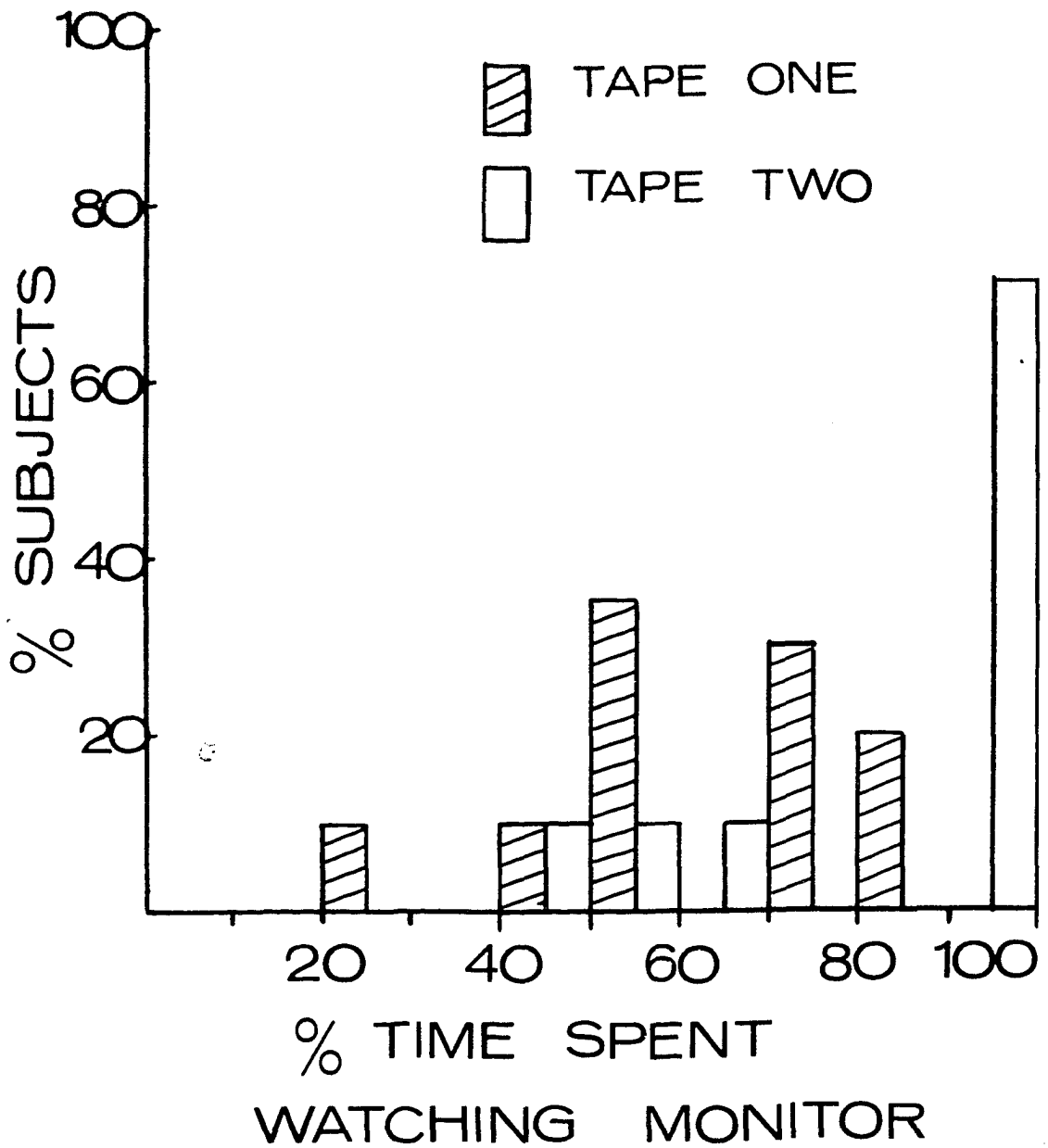


Fig. 10. Amount of time every subject spent looking at the screen during segments of tape one and tape two.



Seventy percent of the Ss watched between 91% and 100% of the tape two segments, and the other third were spread evenly over the 40% to 70% range. Subjects, however, watched far less of tape one segments.

The purpose of this method was to place portions of one tape, with low reinforcing value, and portions of another tape, with high reinforcing value, side-by-side on one tape. This tape could then by shown to one group. These subjects served as their control thereby eliminating variability which may exist when showing two tapes to two separate groups and the comparing.

The results of this procedure are consistent with the data of the previous study concerning the reinforcing effectiveness and thus, the response maintaining characteristics. The insufficient visual stimulation and auditory change in tape one again evoked a low rate of looking behavior. Similarly, the high frequency of stimulus change and the reinforcing effectiveness of tape two resulted again in a high viewer rate of looking.

There are certain drawbacks with the use of this method of studying television viewing. When segments of different programs are combined in this way, characteristics of one tape affect the other. For example, it was noted that some students fell asleep during tape one segments and remained asleep during tape two segments.

Therefore, the looking behavior during tape two segments was slightly decreased from the looking behavior emitted when the tape was shown alone in Study 2. Likewise, the high reinforcing effectiveness of tape two sustained more looking behavior during tape one segments than when the tape was shown alone. These effects are evident by comparing Figures 2 and 9. The overall looking behavior of tape one was raised and of tape two was lowered using the second procedure.

These kind of results could be desirable in some situations. When a necessary but minimally reinforcing segment must be included, careful programming can maintain viewing through this portion. If it is placed between two fast-moving segments, the reinforcing power of these segments may sustain a higher amount of looking than would otherwise occur during this portion.

STUDY 4

Study 4 sought to determine the effects of manipulating duration of sound and visual stimuli on the amount of looking behavior of television viewers when content remained constant. Again, subjects were used as their own control as they viewed a video-tape composed of alternating segments employing different presentation procedures.

METHOD

Subjects:

Forty students enrolled in an Introductory Psychology course at Western Michigan University viewed the video-tape. The subjects were divided into two classes with 20 students each. The tape was shown to both classes only once. The age range of the subjects was approximately 18 to 25.

Apparatus:

Two persons participated as "actors" in the production of the video-tape. Since persons with fairly well-trained speaking voices were preferred, two student announcers from WIDR, the campus radio station, were selected.

The audio-visual equipment used in the production

of the tape included a Sony camera model #7201, an Ampex VR 5100 recorder, a one-inch 3M video-tape, a Motorola 23-inch screen television monitor, and a microphone. The material selected as the script consisted of three popularized articles concerning autism. Three copies of the script were needed, one for each speaker, and one for the observer.

In playbacks, the video-tape was broadcast from the campus television studio over classroom monitors. Slides and a Kodak Carousel AV 900 slide projector were also used in the classroom during playbacks. The clock and data sheets were the same as those in the previous study.

Procedure:

The audio-visual equipment was positioned facing the speakers who sat in chairs situated side-by-side. The microphone was placed on a table between them. One hour before taping began, copies of the script were given to the speakers for rehersal. On camera, the material was merely to be read as outlined; no memorization was necessary. The material was divided into eight segments with a mean reading time of five minutes each. During the first segment, both speakers read alternately from the script for approximately 10 seconds. During this segment, three camera angles were used: angle one

on speaker one alone, angle three on speaker two alone, and angle two on both speakers together. Camera angles were interchanged in a mixed order approximately every 30 seconds throughout the segment. During the next segment, speaker one read alone for the entire five minutes, and only camera angle one was used. Techniques of the first segment were again employed in the third segment. Speaker two read alone in segment four and only camera angle three was used. This procedure was repeated through the last four segments. There were no interruptions during taping to change segments. Segment shifts were indicated on each of the speaker's scripts. The portions to be read by each announcer were underlined on their separate scripts. The end product was a continuous 40-minute tape with alternating reading procedures.

The tape was then shown to the two groups over television monitors during their classtime. With one group, slides were randomly selected and projected onto a screen to the right of the monitor. The carousel slide projector was set automatically on a 15-second delay, that is, each slide was presented for 15 seconds and then changed automatically. With the second group, no slides were shown. The instructions given the Ss and the method of recording were the same as those in

studies two and three. Any explanations as to the procedures or purposes of the session requested by the Ss were given at the end of the tape.

RESULTS AND DISCUSSION

During the playback in which slides were presented as the distractor, those segments in which both announcers read for 10 seconds each, "both" segments, received a somewhat higher level of looking behavior than those segments in which one speaker read for the entire five minutes, the "alone" segments. These results are shown in Figure 11. The medians of each segment are indicated by horizontal lines. Both speakers read during the first segment in which a median of 70% of the Ss watched the monitor. The median then dropped to 35% for the second segment in which only one speaker read. Responses increased in each adjacent "both" segment and decreased in each "alone" segment, with the exception of segments five and six.

Figure 12 presents the amount of time Ss spent watching the "alone" and the "both" segments. None of the Ss watched more than 90% of the "alone" segments. As many as 15% of the subjects watched from 0 to 10%. Fifteen percent of the Ss, however, watched 91% to 100% and only 5% watched 0 to 10% of the "both" segments.

Fig. 11. Percentage of subjects looking at the television screen while slides were also being projected. Alternating reading procedures are indicated.

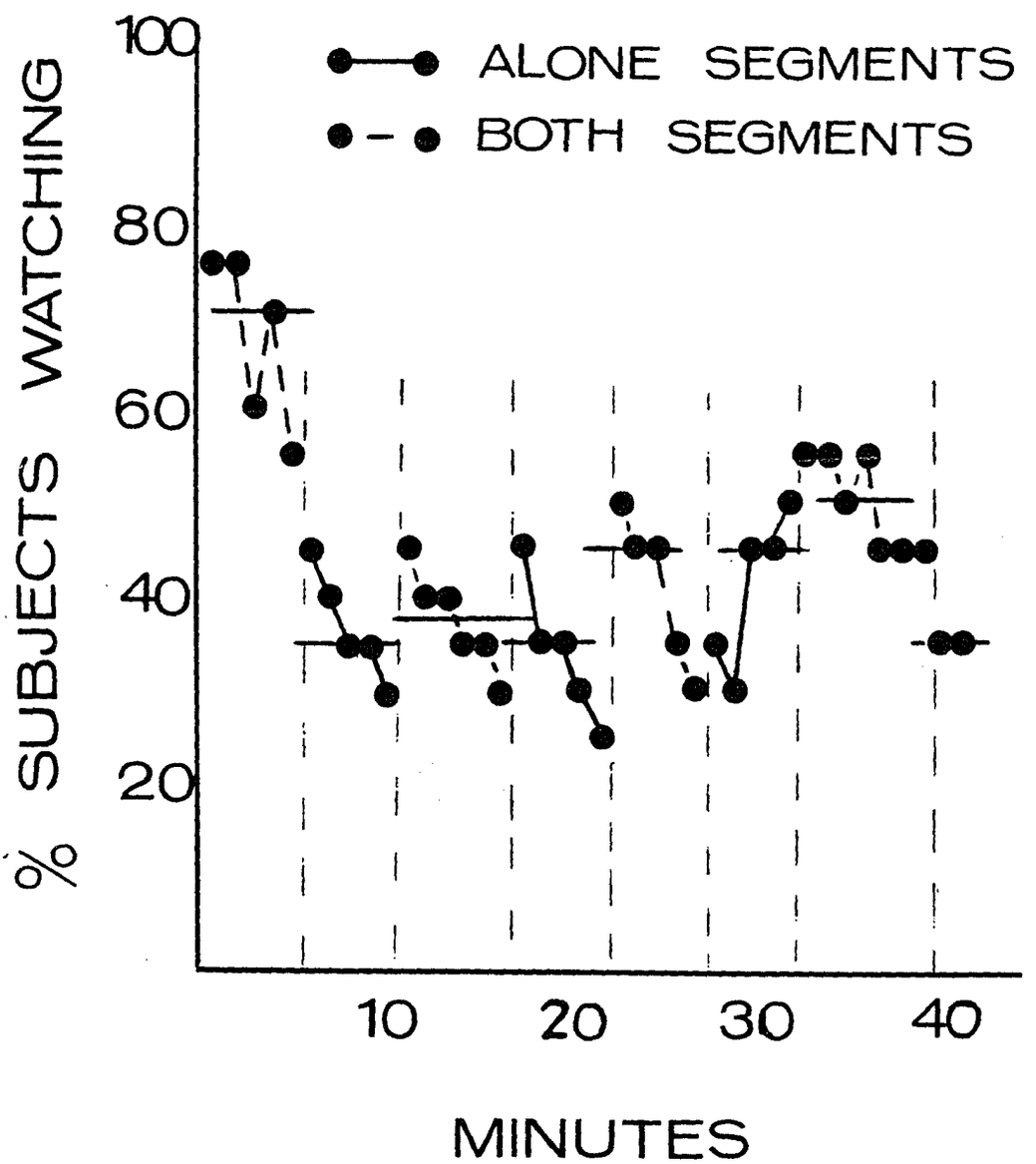
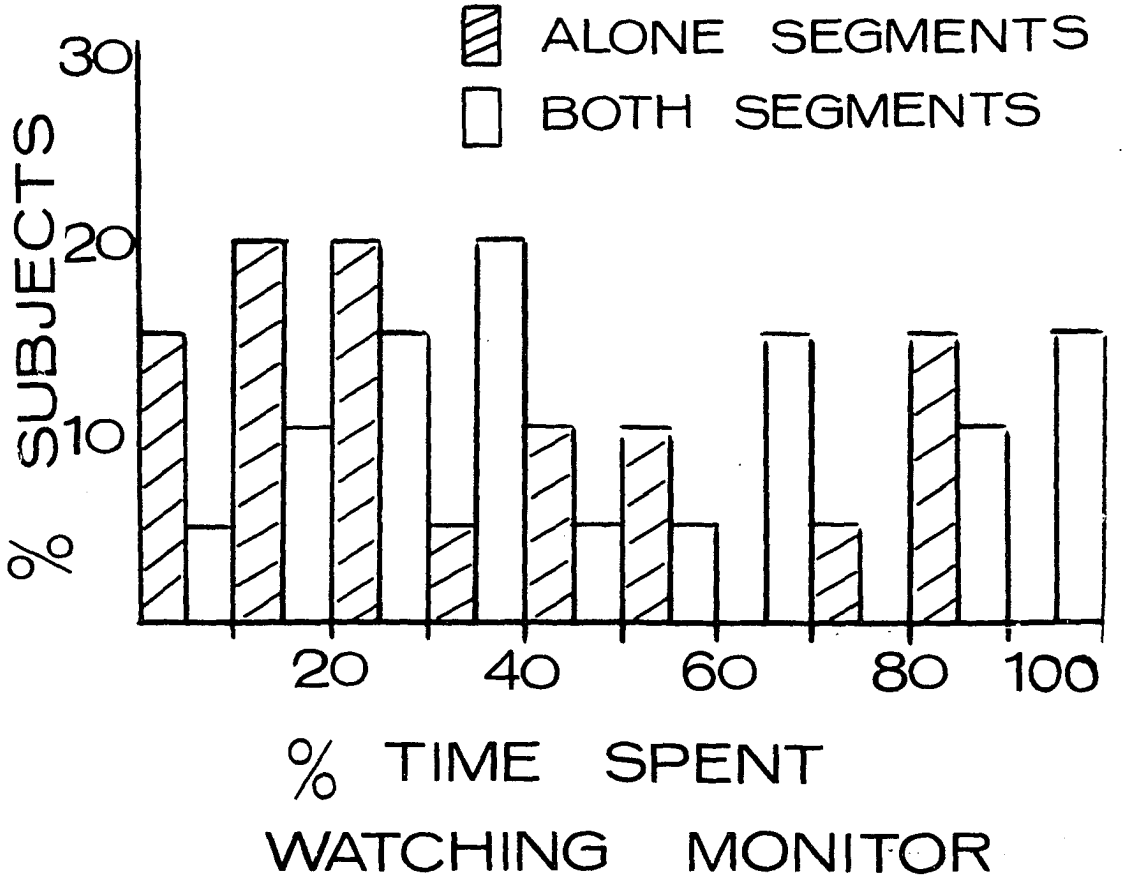


Fig. 12. Amount of time each subject looked at the screen during "alone" and "both" segments. Slides were also presented.



When slides were not shown during the tape, responding was higher in the "both" than in the "alone" segments for the first four segments but the distinction was lost after that, as seen in Figure 13.

Also, when no slides were presented, Ss spent a greater amount of time watching the screen during "both" than "alone" segments. Ten percent watched 91% to 100% of the "alone" segments, and 15% watched 91% to 100% of the "both" segments, as illustrated in Figure 14. Although the overall level of looking at the screen was lower with the presence rather than the absence of the slides, more Ss watched the "both" segments than did the "alone" segments when the slides were shown.

The procedure of this study was an attempt to apply the method of study three to the production of a video-tape. The "alone" segments were slow-moving with long audio and visual durations, producing little reinforcement. The "both" segments were fast-moving with brief stimulus exposures, producing greater reinforcement on a concurrent schedule, that is, reinforcement was available concurrently on different schedules on the two screens. The presence of a concurrent schedule raises the sensitivity of the response to reinforcement. Reynolds (1961; 1963) holds that increases in rate of reinforcement in one component generally produces

Fig. 13. Percentage of subjects looking at the screen when slides were not being shown. Segments indicate alternate reading procedures.

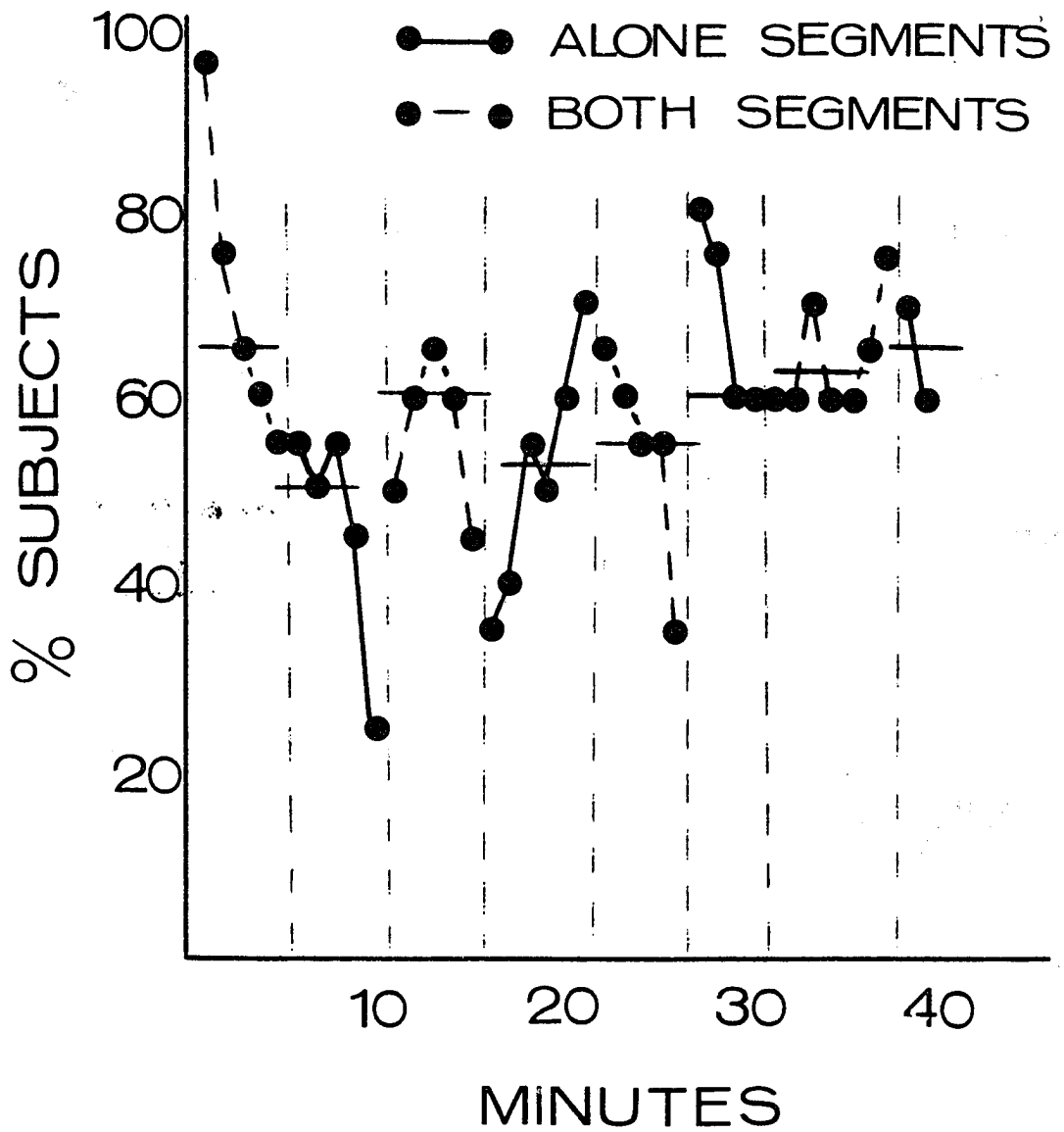
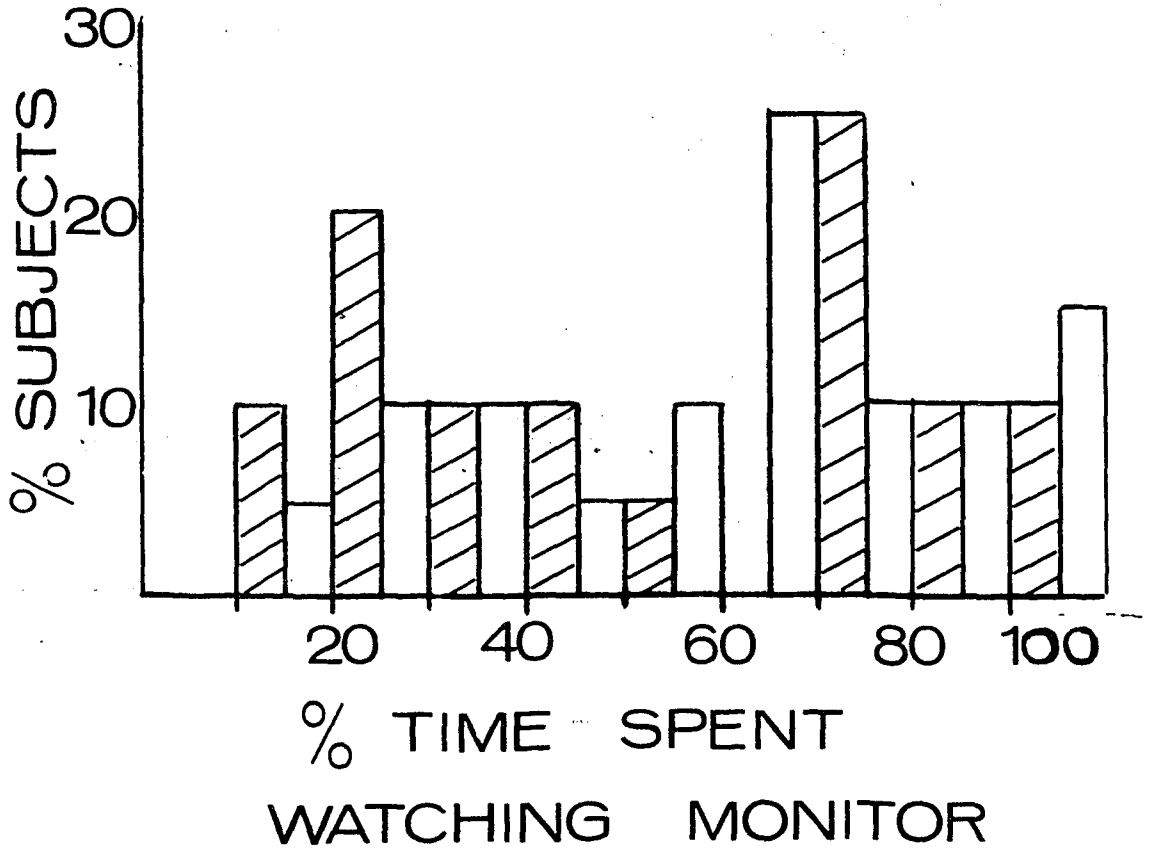


Fig. 14. Amount of time each subject spent with "eyes on the screen" during "alone" and "both" segments. Lined bars indicate "alone" segments. No slides were presented.



decreases in rate of responding in the other component. When the probability that further reinforcement is, for a time, not forthcoming, say, from the television, the S can turn to the alternate schedule, the slides. When two responses are concurrently available, the choice of response depends on the strength of the reinforcer provided. Relating to the concurrent video-tape-slides presentation, the S directs his looking to that which provides him with the greatest reinforcement. If the tape is more reinforcing, he will orient toward that. But when the tape loses its reinforcing effectiveness, there is an alternative to which he may respond, the slides. He does not look at the video-tape when it is no longer reinforcing simply because it is the only response available but looks at it because it is more reinforcing at that time than are the slides. Presentation of slides with the video-tape, therefore, did not serve to distract the viewer's orientation from the tape but instead sensitized the response to the more reinforcing schedule.

CONCLUSIONS

Results of the four studies concur that the likelihood a person will orient towards the television may depend more on the method of presentation than what is actually being presented. This is not to discredit the importance of such factors as content and artistic judgement but to present other variables which have a sizable effect on the control of viewing. Novel visual and auditory stimuli have powerful control over maintaining a person's looking behavior. If the stimulus lasts too long, however, the novelty wears off and so does a good deal of the reinforcement. Even if the content is not sufficiently reinforcing, the proper programming of variables not directly related to content can have adequate control over the viewer to maintain his looking at the program. Although program ratings are determined by whether or not the viewer's television is on regardless of his actual moment-to-moment looking response, unless his watching is maintained throughout the program, there is a low probability that the viewer will return to the same program again the following week.

Two methods for studying these variables were presented. Results obtained with the use of each indi-

cate that the first method, in study two, yields more accurate measures than does the second, in study three. The techniques of the second method may be useful in the programming of material, for example, increasing looking at the screen during boring segments by placing them between highly reinforcing, fast-moving portions.

The method of observing and recording behavior used in studies one, two, and three, was an effective measure of the moment-to-moment changes in the viewer's television watching. It provided an accurate basis on which to study the variables affecting looking behavior and is far more economical than Lindsley's conjugate reinforcer system (1962).

In summary, the reinforcing effectiveness of a program can be assessed by the observation of the viewer's looking behavior. This data may be attributed to the changes in audio-visual stimulus conditions throughout the program. With knowledge of variables controlling television viewing, television presentations could be programmed to offer the greatest amount of reinforcement and, therefore, yield a high degree of watching among the viewers.

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