*A CIRCUIT FOR VIDEO-TAPE INTERVIEWING AND
ITS RECORDING RELIABILITY*

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A circuit to automate fully a standardized video-taped interview (SVTI) is developed.
Data are reported demonstrating good instrument reliability.

For many years, interaction research has suffered because of the lack of articulation of its measures, because of problems in stimulus control, and because of its assessment tools. The dyad is the smallest unit in most interaction research and can best be studied in the interview situation. Matarazzo (1962) was able to refine research upon the traditional interview situation through standardizing the temporal aspects of the experimenter's speech. He and his colleagues found meaningful and statistically reliable differences that varied with nosology, and that were subject to change as a function of treatment regimes.

More recently, a video-taped standardized interview (SVTI) has been developed that fully controls the presentation of the experimenter in the interview dyad (Dinoff, Clark, Reitman, and Smith, 1969; Dinoff, Finch, and Skelton, 1971; Dinoff, Newmark, Barnhart, Holm, Stern, and Saunders, 1970; Dinoff, Stenmark, and Smith, 1970) and thereby makes the presentation of the experimenter identical in any interview setting. Because of the precise rules and mechanization of SVTI, the delivery of the experimenter as a stimulus can be completely automated. Similarly, the accuracy of recording the subject increases because of improved voice-operated relay capabilities and recording devices.

This paper describes a research instrument that has enabled the almost total automation of

SVTI and the improvement of the collation of its data. Some instrument reliability data is also reported.

As suggested above, SVTI was originally intended as an interview technique, since experimenter's utterances preceded subject's responses in time. However, Newmark (1971) suggested that by reversing the sequence, *i.e.*, allowing subject to respond before the appearance of experimenter's picture and verbal utterance, the procedure more clearly resembled operant methodology. He used the basic SVTI instrument to deliver pre-recorded experimenter reinforcements on a predetermined schedule and duplicated operant findings. The pre-recorded experimenter served as an effective positive reinforcer.

SVTI is a series of 15 pre-recorded video and audio utterances modified from Webb's (*in press*) library of verbal utterances. Webb developed a series of open-ended, non-directive utterances used to catalyze speech in a pre-recorded audio interaction. In the present use, a picture of the experimenter appears on subject's monitor for approximately 5 sec. SVTI pre-recorded statements are as follows:

1. I'm Dr. D. . . I want you to tell me as many different things as you can that seem important to you.
2. Very good. I wonder if you would tell me some more about yourself as we go on.
3. Perhaps it would help me to understand you if you would give me an example or two of that kind of thing.

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4. I'm not exactly sure that I understand what you mean. Can you tell me a little more about that?
5. Would you like to talk about that a little more, fill in some of the gaps and tell me about it?
6. Please don't feel that you have to talk all of the time. Sometimes a person needs a little time to think.
7. I see. I wonder if you can tell me more as to how you feel about your experience?
8. That seems very interesting to me. Can you tell me some more about what you have just told me?
9. Perhaps you would like to tell me a little more about that and about how you feel about it?
10. I wonder if you can tell me how that is like anything else that has happened to you before?
11. Now, would you mind telling me again, what are the important things you are thinking about?
12. Can we go from there? What else can you tell me about what we are talking about?
13. You're doing fine. Why don't you just go ahead and tell me some more about those things?
14. What do other people seem to think about that? Do you have any idea how they feel about it?
15. We've discussed a number of different things. I wonder if you could sum up some of what we have been talking about?

The following instructions or similar ones are generally read to each subject:

We are trying to develop modern techniques of interviewing. The man who is interviewing you will appear on the television screen in front of you from time to time and he will talk to you. Talk with him as if he were in the room with you.

It may seem a little strange at first but after a while it will seem easier. Do you have any questions?

All questions are referred to the end of the interview.

A lavalier microphone is attached to subject. In an adjacent room, the subject is observed through a one-way vision screen or by a closed-circuit video system. All video and audio recording and playback equipment is housed in this observation room.

There are three rules for the SVTI interview:

1. After each experimenter utterance, subject is allowed 15 sec to respond verbally. If he does not respond, the next experimenter utterance is automatically delivered.
2. If after an experimenter's utterance, subject verbally responds within 15 sec no other experimenter utterance is delivered until subject is silent for two consecutive seconds.
3. The interview is terminated after subject's response (plus a 2-sec pause) or non-response (15 sec) to experimenter's fifteenth utterance.

SVTI requires the accurate measurement and recording of the following information:

1. Total time of interview (through subject's last utterance).
2. Experimenters time of talking.
3. Experimenter's units (onsets of discrete units of speech. Experimenter's units should always be 15).
4. Subject's time of talking (total time subject was in fact talking).
5. Subject's units (onsets of discrete units of speech).
6. Subject's latency (to experimenter's preceding utterance).
7. Counting of non-responses to experimenter (up to 15).
8. Recording of experimenter and subject onsets and off-goes of speech on sepa-

rate lines of an operations recorder enabling a pictorial presentation of the flow of events of the dyad and reflecting the patterning of the interaction.

Table 1 lists all the equipment necessary for the SVTI instrument described below.

Table 1
SVTI-Equipment List

<i>Electromechanical Instrumentation System</i>	
(a)	1—Voice Operated Relay, Grayson-Stadler Model E7300 A-1
(b)	2—Running Time meters, Grayson-Stadler Model E3340B
(c)	3—Pulse Formers, Grayson-Stadler Model E783F
(d)	1—Four-Channel, Four-Digit Counter, Grayson-Stadler Model E3700A
(e)	1—Electrical Timer, Grayson-Stadler Model E1100H
(f)	1—Interval Timer, Hunter Model 111-C
(g)	1—28-v dc Power Supply, Grayson-Stadler Model E1100D
(h)	1—Clock Timer, 1/100 sec/div., Standard Model S-1-8082
(i)	1—Event Recorder, Esterline-Angus, Model A. W.
(j)	1—Five-light Panel, Grayson-Stadler Model E3217A
(k)	8—DPDT, 28-v Relays, custom built
(l)	1—4PDT, 28-v Relay, custom built
(m)	1—Switch Panel, Grayson-Stadler Model E3610B
(n)	1—Mounting Frame and Power Strip, Grayson-Stadler Model E783AA
<i>Associated Audio/Visual Equipment</i>	
(o)	1—Video-Tape Recorder, Ampex VR 7500C
(p)	2—Video monitors, Conrac CN8B
(q)	1—Video Switcher, Microtex
(r)	1—Video monitor, Satchell-Carlson Model 2100SD
(s)	1—Microphone, Electro-voice Model 655C
(t)	1—Boom Stand, Atlas
(u)	1—Audio Mixer, Ampex Model AM-10 with V. U. Meter panel
(v)	Cables, Adapters, Headphones, etc., to connect as a working system

Figure 1 describes the circuit as it operates in the laboratory.

A microphone is wired through an audio console. The output of the audio console is fed to

the voice-operated relay and to the audio-tape recorder. The audio output of the video-tape recorder is also fed to the audio console. The audio console is a dual-channel mixing amplifier. The subject responds on Channel "A", and the video-tape recorder is brought in on Channels "A" and "B". Channel "B" output containing "experimenter" audio only is used for the subject's monitor. Channel "A" output contains both the subject audio and the experimenter audio and is used to drive the voice-operated relay, the audio-tape recorder, and the observer's monitor.

The task of the electromechanical system is to differentiate between experimenter's and subject's audios. The latter is done by precise timing according to the previously stated rules of SVTI. There is the possibility of a tie by experimenter and subject, which leads to experimenter overriding subject.

The two electronic timers are the main control for the output pulses for the voice-operated relay. They determine whether a pulse is to be detected as an experimenter utterance or a subject utterance according to SVTI rules. The E1100 Grayson-Stadler timer is set for a 2-sec interval and the Hunter 111C is set for a 15-sec interval. Both timers are reset with each audio impulse. From Figure 1, it can be seen that if there is no audio impulse for 15 sec, the T-light and the T-line relays, which are K₁, K₂, K₃, and K₅, are closed by receiving a ground through the output contacts of the two timers. These relays control whether the pulses are recorded as experimenter or subject utterances. They also start and stop the video-tape recorder automatically. After the T-line relays are energized, the audio from the video-tape recorder (experimenter utterances) is continuous for 5 sec. These utterances reset both timers and through K₉ place a self-holding contact on the T-line relays until the end of experimenter's utterance. Should subject make any utterance during the 15-sec interval, K₇ is energized and has "a self-holding" contact through K₂.

A set of K₇ contacts is used to by-pass the Hunter 111C contacts to ground through a set

Fig. 1. SVTI circuit schematic.

of K_9 contacts. K_9 is energized if there is any audio. It can be seen that the in-circuit timer controlling the T-line relays is the E-1100 Grayson-Stadler Interval timer set at 2.0 sec.

All charting, timing, and counting are simple series circuits based upon sequence timing of the involved relays by the two previously described interval timers.

A control relay, K_4 , is placed in the circuit so that control functions can be returned to the video-tape recorder. The circuit necessary to measure subject's initial latency after each experimenter utterance has a Standard S-18032 clock timer that is used to accumulate the total latency. In Figure 1, K_8 is the latency relay. The timer and chart recorder are both wired to this relay. K_8 is controlled by the action of K_7 and K_2 . K_7 is energized when there is audio of any kind.

Assume that audio is being produced from the video-tape recorder (experimenter's utter-

ances), K_7 remains closed because of a ground through the K_9 relay contacts. As soon as the experimenter utterance is delivered, K_9 opens which drops K_7 out of the circuit. K_8 is then energized through the K_7 contacts, and through K_2 contacts which is non-energized after the T-interval. The clock timer runs as long as K_8 is energized. When subject produces an utterance K_9 again closes, closing K_7 , which now receives a self-holding contact through K_2 , a T-line relay.

The video signal to subject's monitor can be switched manually if a video switcher is used. Provisions have been made and circuits included that will operate a video change-over relay to place the picture on the monitor at the instant of experimenter's utterance.

EXPERIMENT 1

Twelve hospitalized patients from the Tuscaloosa Veterans Administration Hospital were

Table 2
The Reliability of Live SVTI and Audio-Recorder Data

Measure	Live Interview		Recorded Interview		<i>t</i>	<i>p</i>	<i>r</i>	<i>p</i>
	Mean	S.D.	Mean	S.D.				
Subject's Unit	75.67	76.26	74.92	77.13	0.96	N.S.	0.99	0.01
Subject's Time	4.64	6.02	4.65	6.02	-0.72	N.S.	1.00	0.01

selected at random and brought to the SVTI laboratory and interviewed as per the above description of the administration of SVTI. While the interview occurred, the recording instrument found in Figure 1 operated, and, subject's speech was audio-tape recorded simultaneously. The audio-tape was later played through the SVTI recording circuit again to determine instrument reliability. These data are found in Table 2.

Clearly, the instrument described above acquires and records audio data reliably. Ultimately, this instrument has the potential ability to be computer programmed and to feed its data directly into that computer for storage or computation.

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