

## CONDITIONING HISTORY AND HUMAN FIXED-INTERVAL PERFORMANCE<sup>1</sup>

HAROLD WEINER

SAINT ELIZABETHS HOSPITAL

The effects of two different conditioning histories upon human operant behavior under a FI 10-sec schedule of point reinforcements were investigated. Relatively high rates of continuous inter-reinforcement responding characterized the FI 10-sec performance of subjects with an FR 40 conditioning history. Low response rates with little or no inter-reinforcement responding were emitted by Ss with a DRL 20-sec conditioning history.

A previous study (Weiner, 1962) demonstrated that inter-reinforcement responding in humans under fixed-interval (FI) contingencies may be related to response cost conditions. The present study investigated the effects of two different conditioning histories upon the FI inter-reinforcement responding of humans.

### METHOD

#### *Subjects*

Six psychiatric nursing assistants (four female, two male) ages 27-58 (mean age 38), were paid on an overtime basis at the rate of \$2.50 to \$5.00 per hour, depending upon their salary level. Financial remuneration was not contingent upon their operant performances.

#### *Apparatus and Task*

A microswitch key was mounted in a table top in front of a display (*cf.* Weiner 1963b), which consisted of a five-digit add-subtract counter and numbered lights. The latter provided discriminative stimuli for the various experimental contingencies.

Subjects began each session with five zeros showing on the add-subtract counter. They were instructed to get as high a score as possible on the counter by pressing the microswitch key (with a force of approximately 20 g

through a distance of 1 cm) "in some fashion". They were told nothing about the purpose of the experiment, the nature of the reinforcement contingencies, or how to press the key.

#### *Procedure*

Three randomly-assigned Ss were conditioned on a 40-response fixed-ratio (FR 40) schedule (10, 1-hr sessions). Every 40th key press was reinforced by the addition of 100 points to the Ss' scores. Three other randomly assigned Ss were conditioned on a 20-sec differential reinforcement of low rates (DRL 20'') schedule (10, 1-hr sessions). A single response was reinforced by a 100-point addition to the S's score only when it followed a period of no responding by 20 sec or more. A response emitted before 20 sec had elapsed from the immediately preceding response postponed the 100-point reinforcement for another 20 sec.

Following these different conditioning histories, all Ss were conditioned on a 10-sec fixed-interval (FI 10'') schedule (10, 1-hr sessions followed by 10, 1/2-hr sessions). Under the FI 10'' schedule, a single response produced a 100-point reinforcement only after 10 sec or more had elapsed from a previous reinforcement.

Distinctive lights were associated with the FR 40, DRL 20'', and FI 10'' schedules. Transistorized digital elements and networks (Weiner, 1963a) were used to program the experimental contingencies. Responses were recorded continuously on a Gerbrands cumulative recorder.

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## RESULTS AND DISCUSSION

During FR 40 conditioning, Ss emitted relatively high continuous inter-reinforcement rates of responding. The DRL 20" schedule effected low rates of temporally-spaced responses. Final average response rates for all Ss during FR 40 and DRL 20" conditioning are shown in Table 1.

Figure 1 shows the FI 10" performances of the Ss following FR 40 and DRL 20" conditioning. This figure presents cumulative response curves of the Ss during the last 15 min of FI 10" conditioning. Similar FI 10" rates and patterns were obtained during the final six sessions (Sessions 25-30). The average FI 10" response rates for all Ss during Sessions 25-30 are presented in Table 1.

TABLE 1

Average Response Rates in Responses Per Min during History and FI 10" Conditioning

	History Schedule		FI 10" Schedule				
	FR 40	25	26	Sessions			30
			27	28	29		
S1	412	101	115	80	93	58	64
S2	380	389	420	379	377	396	406
S3	240	30	30	31	44	26	55
	DRL 20"						
S4	7	4	6	8	5	8	6
S5	3	7	4	6	6	6	6
S6	3	8	6	8	7	8	9

NOTE: Each entry under the History Schedule Column represents the mean rate (in responses per min) of the last three sessions. The means have been rounded to the nearest whole number.

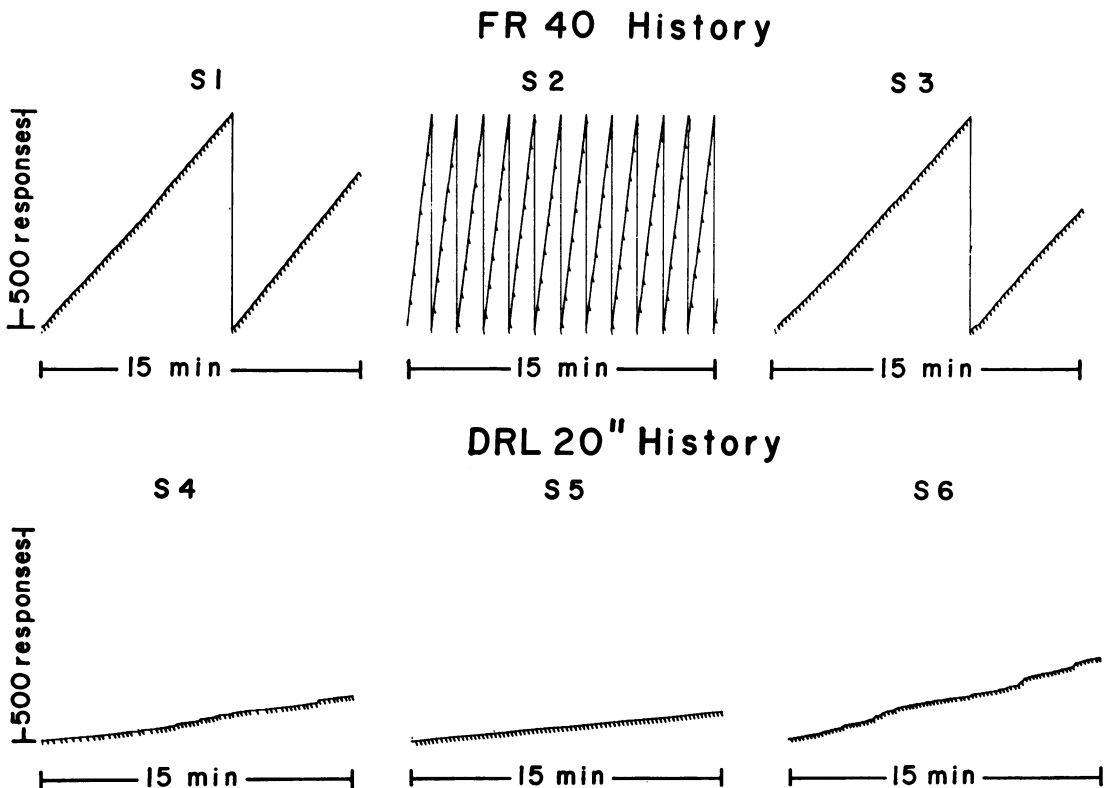


Fig. 1. FI 10" performances following FR 40 and DRL 20" conditioning histories. Vertical marks on the record indicate the occurrence of 100-point reinforcements.

Markedly different FI 10" performances were obtained from the Ss with the FR 40 and DRL 20" histories. In general, the FR 40 and DRL 20" patterns of responding persisted during FI 10" conditioning. Following an FR 40 history, Ss emitted relatively high rates of continuous inter-reinforcement responding. The Ss with the DRL 20" history, on the other hand, produced relatively low FI 10" rates with little or no inter-reinforcement responding.

Differences in conditioning histories may possibly account for some of the inter-subject variability commonly observed in the FI performances of humans. The two general types of FI responding effected in the present study have been obtained previously from humans (Holland, 1958; Blair, 1958; Weiner, 1964). Whether or not specific occurrences of continuous inter-reinforcement responding or minimal responding at the moment of reinforcement are related to experimentally-produced or "natural" (pre-experiment) conditioning

histories remains an open question. The important point is that conditioning history must be considered a possible determinant of human FI responding.

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