

The effect of partial satiation on pauses after reinforcements scheduled on alternating fixed ratios¹

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Abstract

Post-reinforcement pauses were measured after each segment of the schedule alternating mixed FR15FR45. Within session pauses after each ratio were roughly equal at first, but those after FR15 typically lengthened abruptly, and lengthened sooner when larger quantities of the reinforcer were given immediately before experimental sessions.

Problem

When behavior is reinforced on fixed-ratio (FR) schedules it is usual for responses to be run off at a fairly constant rate, and for pauses to occur immediately after reinforcement. Sidman and Stebbins (1954) have shown that partial satiation serves to increase the length of post-reinforcement pauses but does not affect the rate at which the ratio is run off once responding has begun. That is, increasing satiation reduces the probability of occurrence of the first response in a ratio run but has no effect on the other responses in the ratio.

The present report is concerned with the effect of partial satiation on the probability of the first response of ratio runs of different lengths in an alternating mixed FRFR reinforcement schedule.

Method

Six male and 2 female albino rats were trained while 22 1/2-hr. food and water deprived to bar press on reinforcement schedule alternating mixed FR15FR45. The experimental chamber was a standard Grason-Stadler 2-bar rat box type E 3125B, but only 1 bar was functional. A force of about 22 gm was sufficient to activate the automatic programming and recording equipment. The reinforcer was normally .1 cc 12% sucrose solution by weight, and was available for 2 sec. on the appropriate occasions. Experimental sessions lasted 30 min. each day.

The experimental chamber was enclosed by a sound reducing ventilated chest, and was located in a room adjacent to that containing the programming and recording equipment.

Four Ss (K1, K2, K3, K4) were trained for over 70 sessions on FR15FR45 with sucrose reinforcement, followed by 15 sessions with water reinforcement, and 8 and 7 sessions with sucrose reinforcement following 2 cc and 4 cc prefeeding of 12% sucrose solution respectively. The other Ss (K5, K6, K7, K8) received 4 cc and 6 cc sucrose prefeeding for 7 and 3 sessions respectively after 17 sessions training on FR15FR45 with sucrose reinforcement without prefeeding. Experimental condi-

tions were never changed before stabilization.

Results

Cumulative response records were typical. Once the first response in a ratio was made the remainder of the ratio was normally run off without pause. Figure 1 shows the *accumulated post reinforcement pauses* after

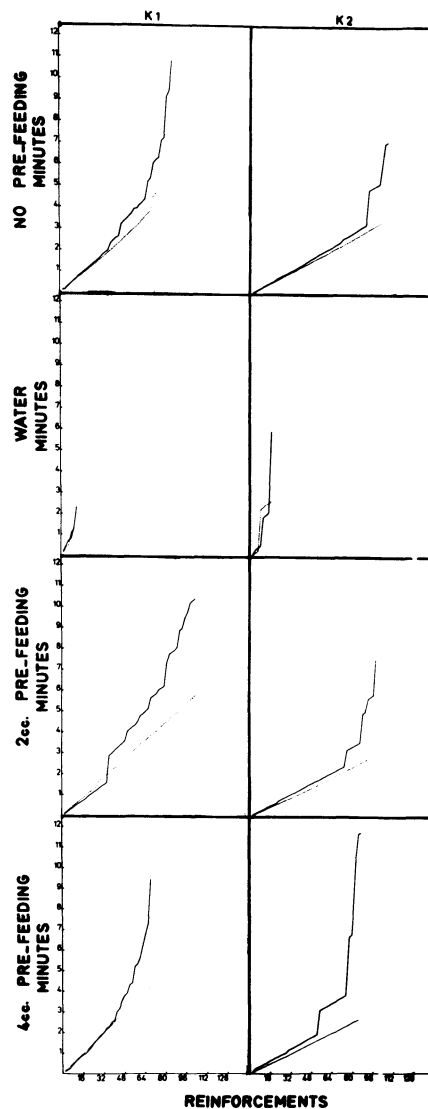


Fig. 1. Representative cumulative records of post-reinforcement pauses following FR15 (solid) and FR45 (broken).

Table 1. Reinforcements consumed by each S before the appearance of long pauses following FR15 (and FR45, in brackets).

Subject	Prefeeding			
	0 cc	2 cc	4 cc	6 cc
1	36	34	40	-
2	88	72	52	-
3	80 (87)	60	32	-
4	-	58	24 (80)	-
5	-	-	82	72 (88)
6	-	-	60	6
7	80 (54)	-	52	46
8	79 (106)	-	74 (78)	54 (85)

the FR15 and FR45 reinforcements separately on the final day before each procedural change for Ss K1 and K2. All 8 Ss behaved similarly in that when sucrose was used as reinforcer pauses after the FR45 component of the mixed schedule remained relatively constant throughout most or all of a session, while those following FR15 lengthened abruptly at some point. The points at which the lengthening occurred on the final session of each training condition are shown in Table 1. In 12 of 13 comparisons of adjacent pairs of prefeeding conditions pauses after FR15 lengthened sooner under the larger prefeeding condition, and these pause increases occurred while pauses after FR45 remained stable in nearly all cases.

Discussion

Sidman and Stebbins (1954) have shown that partial satiation serves to reduce the probability of occurrence

of the first response in a ratio run, but not of responses in the ratio as soon as it is started. The present data go further and show that partial satiation can reduce the likelihood of an animal beginning a larger run while not affecting the chances of it starting a shorter run, and that the breakdown at the beginning of the longer run occurs sooner with larger amounts of prefeeding. Changing the palatability of the reinforcer from sucrose to water, however, resulted in long and irregular pausing after both ratios.

The data are interesting in showing the interaction of motivational and schedule dependent stimulus control over behavior (Ferster & Skinner, 1957). Once responding begins behavior is controlled by the requirements of the schedule, to the exclusion of state of satiation. But when partial satiation reduces the probability of responding beginning it does so differentially according to the schedule requirements (Carlton, 1961).

References

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Notes

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