INDUCTION IN THE PIGEON RESULTING FROM A DIFFERENTIAL REINFORCEMENT OF HIGH RATES OF RESPONDING CONTINGENCY

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ABSTRACT

INDUCTION IN THE PIGEON RESULTING FROM A DIFFERENTIAL REINFORCEMENT OF HIGH RATES OF RESPONDING CONTINGENCY

By

Harry Jay Caplan

Four pigeons were used to determine the effect of a differential reinforcement of high rates of responding (DRH) contingency on the behavioral interactions of a multiple schedule. This contingency resulted in the occurrence of positive induction, i.e. an increase in the response rate in the constant component as a function of an increase in the response rate in the second variable component (the DRH component). This result failed to support Premack's 1969 hypothesis, which states that an increase in response rate, resulting from a rate contingency, will produce contrast. Contrast is a decrease in the response rate in one component as a function of an increase in the response rate in a second component. A subsequent reduction in the response rate in the variable component failed to produce a contrast effect in the constant component. The reinforcement rates in the two components were held constant. A second reduction in the response rate in the second component, produced during extinction, resulted in a contrast effect.

Approved: Mark Rilling
Committee Chairman

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By

Harry Jay Caplan

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To my parents

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My thanks to Dr. Mark E. Rilling whose help and commentary in the preparation of this thesis has been invaluable to me. Gratitude is also extended to my wife Linda for assistance in the preparation of both the written and graphic materials of this manuscript.

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INTRODUCTION

The ongoing behavior of organisms is in part determined by other previous behaviors, and the consequences of those behaviors. Behavioral interactions may be studied through the use of multiple schedules. A multiple schedule consists of two or more independent schedules presented successively to the organism, each in the presence of a discriminable, exteroceptive stimulus. When two stimuli are to be used, one is referred to as S1 and the other as S2. An interaction is a change in the rate of responding during one stimulus as a result of a manipulation during a second stimulus. In the present study, S1 is held constant, while S2 is manipulated. The schedule of reinforcement in the presence of each stimulus depends upon the experimental purposes of the researcher. Usually, the same response is either reinforced or extinguished in the presence of each stimulus, although different responses may be used.

Reynolds (1961b) defines four possible interactions in multiple schedules as follows:

Positive contrast. The response rate in one component increases as a function of a decrease in the response rate in a second component.

Positive induction. The response rate in one component increases as a function of an increase in the response rate in a second component.

Negative contrast. The response rate in one component decreases as a function of an increase in the response rate in a second component.

Negative induction. The response rate in one component decreases as a function of a decrease in the response rate in the second component.

The most commonly studied interaction is positive behavioral contrast. The following studies illustrate procedures for its production. Reynolds (1961a) examined the effect of a reduction in the reinforcement rate during S2 on the response rate during S1. When responding during S2 was extinguished, an increase in the response rate during S1 occurred. A reduction in the number of reinforcements per unit time during S2, resulted in an increase in the number of responses per unit time during S1. The reinforcement rate was held constant during S1. Terrace (1963) noted that as Reynolds reduced the rate of reinforcement during S2, a decrease in the response rate during S2 followed. Terrace proceeded to demonstrate that contrast would not occur during S1 unless there was a decrease in the response rate during S2. This was accomplished through the use of an errorless procedure, during which a discrimination was made between two stimuli, S1 and S2, with no responses or "errors" to S2. Since no responses occurred during S2, a response reduction during S2 was precluded. The failure to produce contrast in this multiple schedule supported Terrace's claim that a response reduction during S2 was necessary to produce contrast. Terrace (1966) found that a reduction in the response rate during S2 is sufficient to produce contrast. The frequency of reinforcement during S2 was held constant. Through the use of a multiple VI-DRL (differential reinforcement of low rates of responding) schedule, a decrease in the response rate during S2 occurred. During the VI component, the first response after a variable amount of time had elapsed was reinforced. During the DRL component the animal was reinforced only if an inter-response time (IRT) of between six to eight seconds occurred. The time varied for each subject. This supported Terrace's claim that a reduction in the response rate during S2 was sufficient to produce contrast during S1.

Premack (1969) stated that a reduction in the rate of responding is not the necessary condition for the production of contrast. Rather, the necessary condition for the production of contrast is an increase in the aversiveness of S2. Premack stated that ". . . any schedule . . . which requires the animal to meet a rate criterion may produce contrast--whether the requirement is that the animal 'slow down' relative to the VI, or 'speed up' . . . ." Premack hypothesized that DRH, as well as DRL will produce contrast. During a DRH (differential reinforcement of high rates of responding) contingency, reinforcement occurs only when a fixed number of responses are emitted before a fixed time interval has elapsed. For example, when the rate requirement is 10 responses in 4 seconds, the pigeon is reinforced only if it responds 10 times within 4 seconds. If it does not meet the requirement, the clock and counter are reset, and the pigeon tries again. As a rate requirement, DRH should produce contrast as DRL has done.

The specific aim of the present study is to examine several response interactions in a multiple schedule. The procedure was an ABAC design. In phase I of the experiment, both S1 and S2 were reinforced on a VI 30 second schedule of reinforcement. Baseline rates of responding in the presence of each stimulus were obtained for 15 sessions. In phase II of the experiment, the effects of a response rate increase in the variable component (S2) on the response rate in the constant component (S1) were examined for 30 sessions. S1 was reinforced on a VI 30 second schedule of reinforcement. A DRH rate requirement was added on to the VI 30 second schedule of reinforcement during S2. In phase III of the experiment, the effects of a response rate decrease in the variable component on the response rate in the constant component were examined for 25 sessions. Both S1 and S2 were reinforced on a VI 30 second schedule of reinforcement. In phase IV of the experiment, the effects of a second response rate decrease during the variable component on the response rate in the constant component were examined for 15 days. S1 remained on a VI 30 second schedule of reinforcement, while S2 responding was extinguished. Except for the extinction during S2 of phase IV, reinforcement rates were held constant throughout the study.

METHOD

Subjects: Four experimentally naive adult female white Carneaux pigeons were used. They were maintained at 80% of their free feeding weight throughout the study.

Apparatus: The experimental chamber was a standard three key Lehigh Valley pigeon box. The two side keys were covered throughout the experiment. At the rear of the chamber was an amber light. Programming and data collection were carried out on standard electromagnetic equipment. A cumulative recorder was used to monitor the responding.

Procedure: S1 was correlated with a red light. S2 was correlated with a green light and a vertical white line, as well as an amber light illuminated at the rear of the chamber. This was done in order to make the stimulus situation, as well as the stimuli, discriminable during each component. S1 and S2 were presented in a pseudorandom series, in which a stimulus was not presented more than three consecutive times. The duration of the stimulus presentations was 90 seconds, and each stimulus presentation was separated by a 5 second blackout. During the blackout, all lights, including a houselight above the center key, were darkened. Pecking the center key was the reinforced response. Reinforcement consisted of a 3 second access to a mixed grain, during which the key light was darkened.

Pretraining involved shaping the subjects. The reinforcement of successive approximations of key pecking resulted in the subjects pecking the key. These two sessions terminated when the subjects received approximately 20 reinforcements for pecking the key in the presence of each of the two stimuli.

In phase I, sessions 1 through 15, baseline rates of responding on VI 30 second schedules of reinforcement were obtained. The baseline rates were compared to the rates in phase II of the study. As a result of the pseudorandom series, each stimulus was presented approximately 17 times per session. The sessions terminated when 34 stimulus presentations were made.

In phase II, sessions 16 through 45, S1 remained on a VI 30 second schedule of reinforcement, while S2 was changed to a variety of DRH requirements. These requirements were accomplished through the use of a tandem schedule added on to the VI 30 second schedule of S2. When a reinforcement became available to the pigeon, a single response no longer produced the requirement. Rather, a number of responses within a fixed period of time were required, in order to raise the food magazine. The time interval began with the pigeon's first peck. This method is similar to that used by Ferster and Skinner (1957). The number of responses, and the limited time during which they were required to occur varied according to the following rules:

1. The purpose of the DRH requirements was to raise the response rates during S2 of phase II.
2. The range of the rate requirements extended from 3 responses in .75 seconds to 11 responses in 4 seconds.
3. Over all, the subjects started at low requirements and went to high requirements.
4. On a few occasions (3-6) subjects had a lower requirement during a session than on the previous session.

If the subject did not complete a requirement, the response requirement counter reset and the pigeon began the requirement again. Reinforcements that were not earned were not "lost," but remained available until they were either earned or carried over to the next component.

In phase III, sessions 46 through 70, S2 was again on a VI 30 second schedule of reinforcement, while S1 remained unchanged; i.e. on a VI 30 second schedule of reinforcement.

Phase IV, sessions 71 through 85, involved the extinction of responding to S2. S1 remained on a VI 30 second schedule of reinforcement.

Reinforcement rates were held constant throughout the study; i.e. at about 2 reinforcements per minute. During each session the reinforcement rate during S1 was used as a guideline for the S2 rates. The reinforcement rate during S2 was kept approximately equal to the rate during S1 by offering additional reinforcement opportunities during S2 through the use of manual reinforcement. This procedure was used only when greater than five reinforcements during S2 were missed. This method is similar to that used by Yarczower et al. (1968).

At the end of each session the pigeons were returned to their home cages and fed to 80% of their free feeding weight. The following data were collected daily:

1. The number of responses during S1.
2. The number of responses during S2.
3. The duration of S1.
4. The duration of S2.
5. The number of reinforcements during S1.
6. The number of reinforcements during S2.
7. The number of responses during the 5 second blackout.

RESULTS

Figures 1 through 4 show the daily response rates for the four subjects during phases I through IV. During phase II a DRH contingency was in effect during S2, while S1 remained on a VI 30 second schedule of reinforcement. The response rate during S2 increased beyond the base rate of phase I. The average increase in the S2 rate was 80% ($\underline{t} = 8.84$, $\underline{p} < .01$). For this and all following $\underline{t}$-tests df = 3. The S2 rate increase was accompanied by an increase in the S1 response rate. The average increase in the S1 response rate was 41.9% ($\underline{t} = 6.94$, $\underline{p} = .01$). This increase in the S1 rate is referred to as positive induction.

During phase III, both S1 and S2 were on VI 30 second schedules of reinforcement. A response rate decrease during S2 was accompanied by a response rate decrease during S1. The average decrease in the response rate from phase II during S2 was 33.9% ($\underline{t} = 5.39$, $\underline{p} = .01$). The average decrease during S1 was 14.1% ($\underline{t} = 2.09$, not significant). The decrease in the response rates in both components is referred to as negative induction. After 25 days of phase III, the effects of the DRH manipulation had not worn off totally, for the response rates had not

Figure 1. Response rate as a function of sessions for bird number 85.

Rates during phases I, II, III, and IV are shown for 5, 30, 5, and 5 days, respectively.

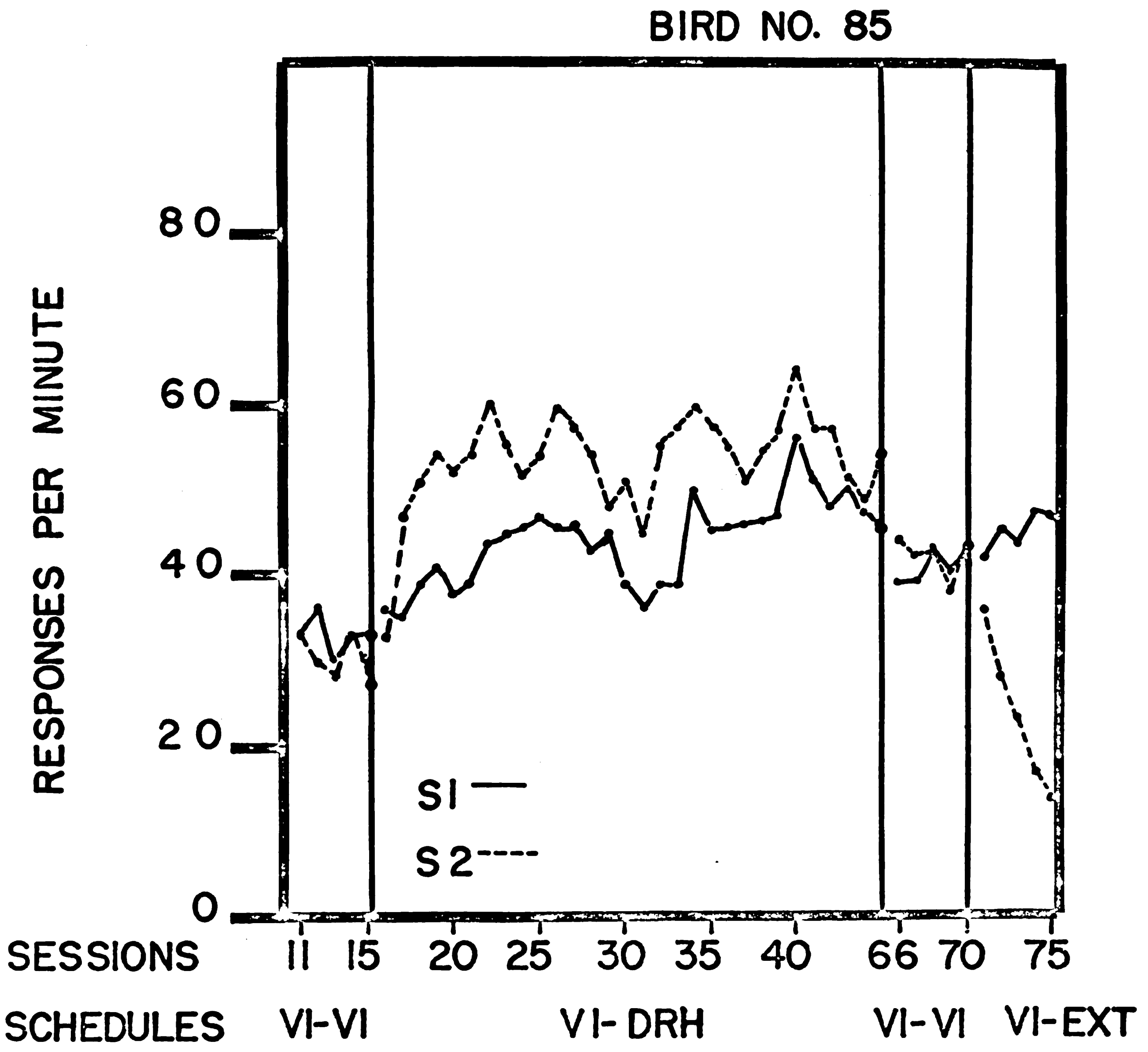
BIRD NO. 85
RESPONSES PER MINUTE
80
60
40
20
0
S1
S2
SESSIONS
11
15
20
25
30
35
40
66
70
75
SCHEDULES
VI-VI
VI-DRH
VI-VI
VI-EXT

FIGURE 1

Figure 2. Response rate as a function of sessions for bird number 1191.

Rates during phases I, II, III, and IV are shown for 5, 30, 5, and 5 days, respectively.

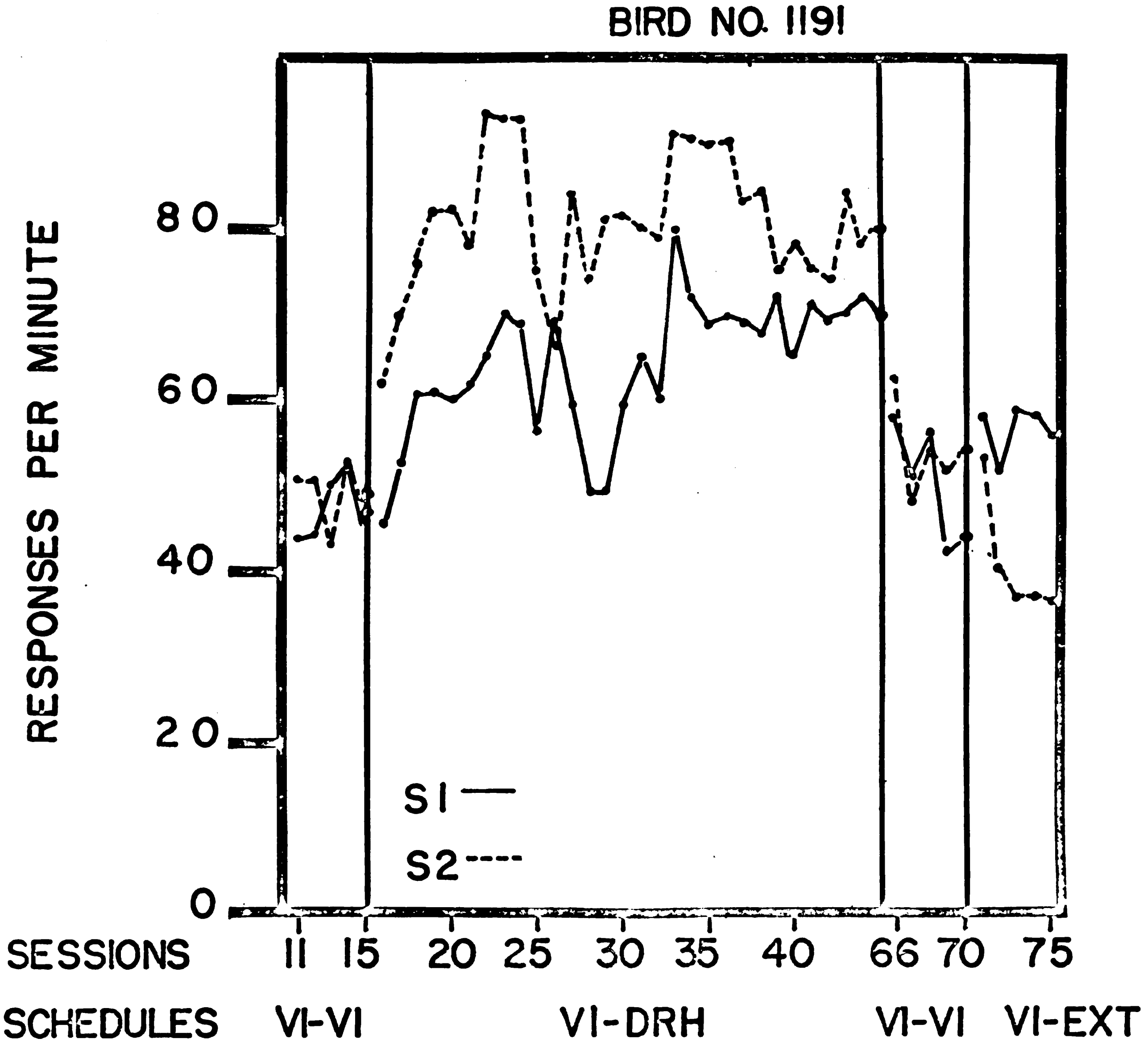
BIRD NO. 1191
RESPONSES PER MINUTE
0
20
40
60
80
S1 —
S2 ----
SESSIONS
11
15
20
25
30
35
40
66
70
75
SCHEDULES
VI-VI
VI-DRH
VI-VI
VI-EXT

FIGURE 2

returned to the original phase I base rates. The response rates during phase III, with the possible exception of bird 1191, had stabilized.

During phase IV, extinction was in effect during S2. This resulted in a response rate decrease during S2. This response rate decrease during S2 was accompanied by a response rate increase during S1. This is positive behavioral contrast. The average response rate decrease during S2 was 33.2% ($\underline{t} = 8.52$, $\underline{p} = .01$). The average response rate increase during S1 was 16.3% ($\underline{t} = 3.63$, $\underline{p} = .05$).

Figure 5 shows the reinforcement rates for the four subjects during phases I through IV. Once the reinforcement rates stabilized during phase I, they remained constant throughout phases I through IV. The pigeons received approximately two reinforcements per minute. There was, however, daily variation in the reinforcement rates, due to the properties of the variable interval schedule. During phase IV, the reinforcement rate during S1 remained at approximately 2 per minute. The reinforcements were no longer available during S2, resulting in a reinforcement rate of 0 reinforcements, expressed per minute.

Table 1 shows the response rate means for all of the subjects and phases. For phase I, the means are based on the last 5 days of the 15 day period. For phase II,

Figure 3. Response rate as a function of sessions for bird number 597.

Rates during phases I, II, III, and IV are shown for 5, 30, 5, and 5 days, respectively.

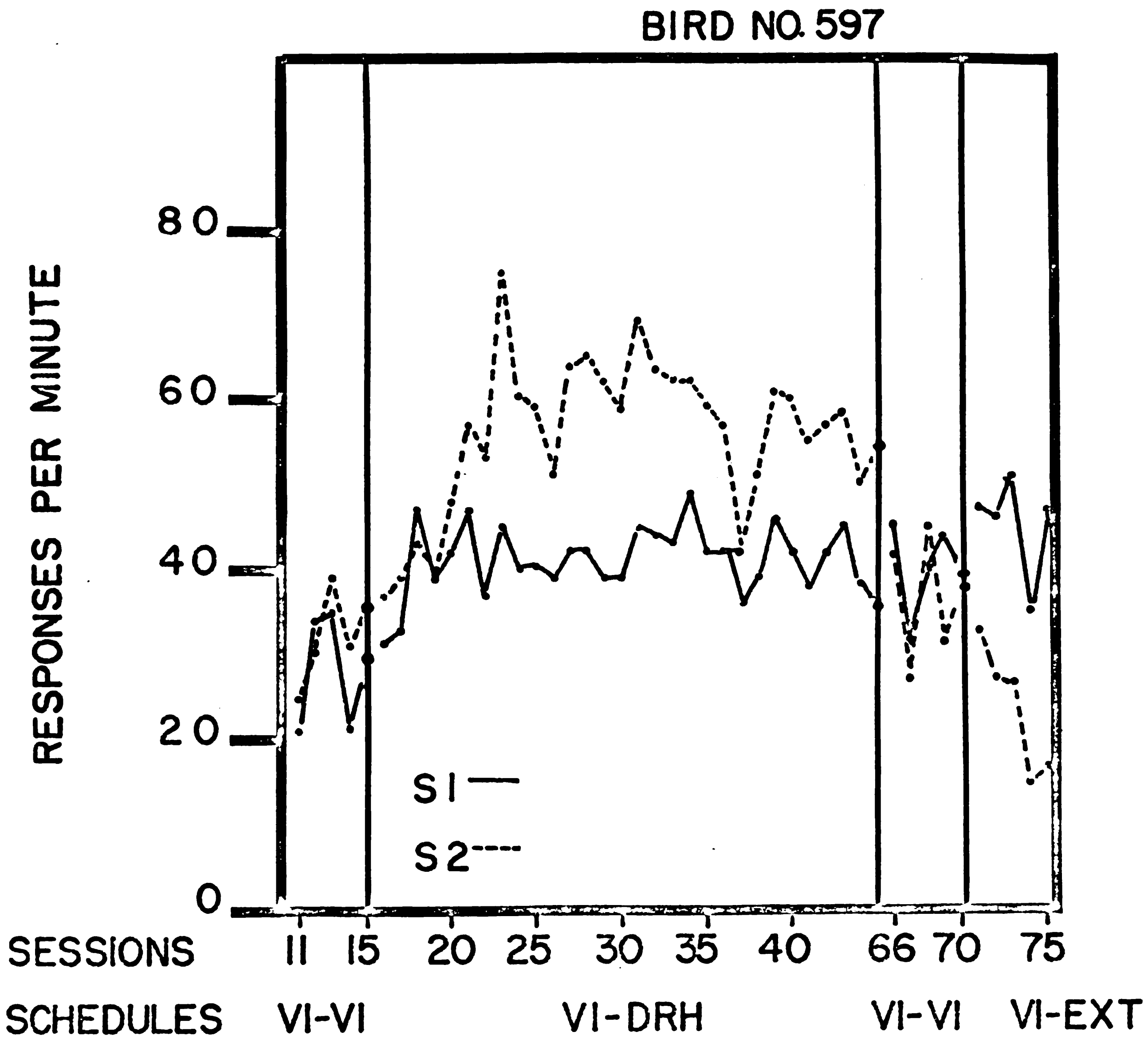
BIRD NO. 597
RESPONSES PER MINUTE
80
60
40
20
0
S1
S2
SESSIONS
11
15
20
25
30
35
40
66
70
75
SCHEDULES
VI-VI
VI-DRH
VI-VI
VI-EXT

FIGURE 3

Figure 4. Response rate as a function of sessions for bird number 738.

Rates during phases I, II, III, and IV are shown for 5, 30, 5, and 5 days, respectively.

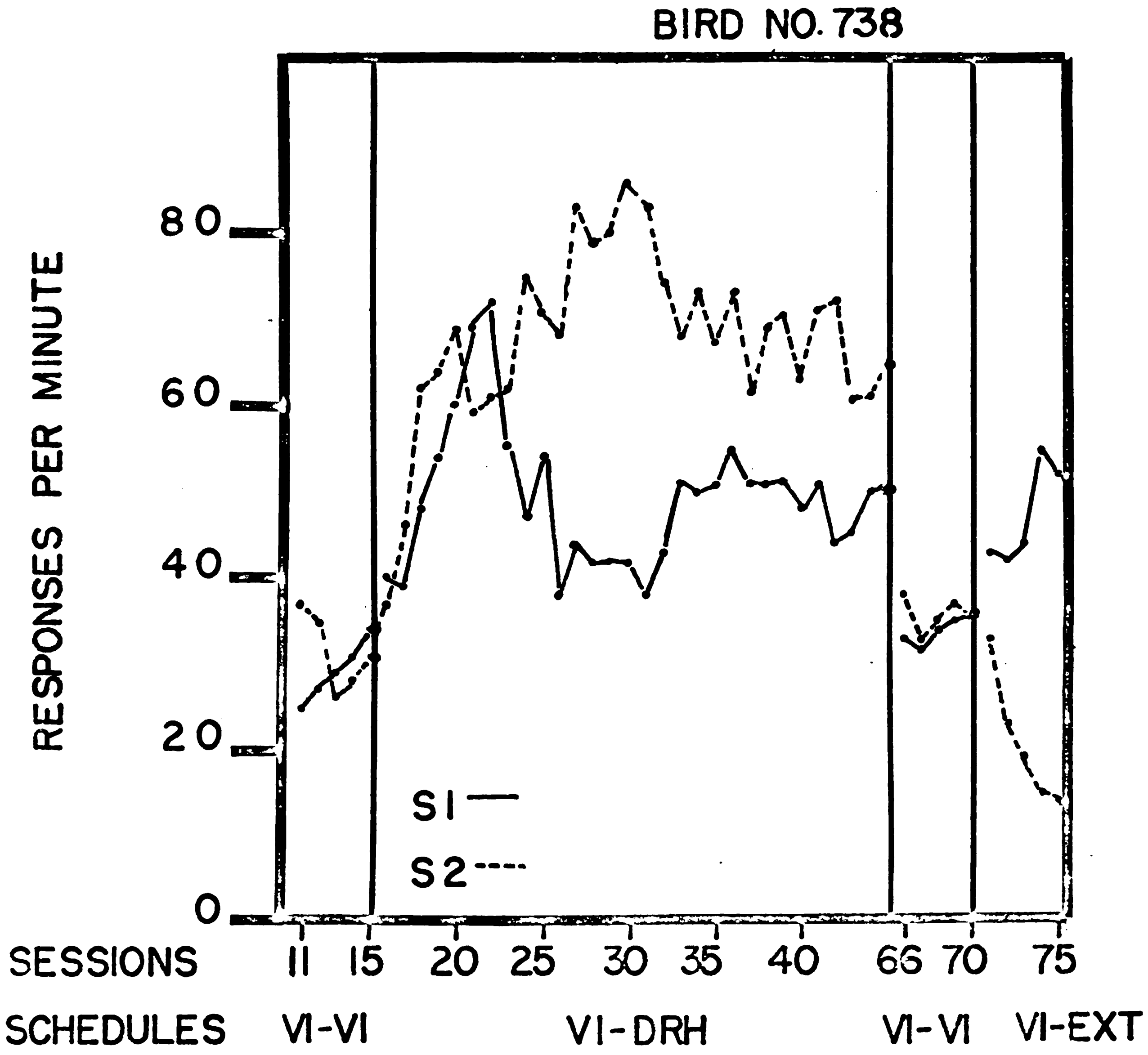
BIRD NO. 738
RESPONSES PER MINUTE
0
20
40
60
80
S1
S2
SESSIONS
11
15
20
25
30
35
40
66
70
75
SCHEDULES
VI-VI
VI-DRH
VI-VI
VI-EXT

FIGURE 4

the means are based on all 30 days of the period. For phase III, the means are based on the last five days of the 25 day period. For phase IV, the means are based on the first 5 days of the period. Table 1 again demonstrates the response rate changes that were evidenced in figures 1 to 4. In addition, information is given concerning the average number of responses during the 5 second blackouts that separated stimulus presentations during all of the four phases. All subjects showed a greater number of responses during the blackouts of phase II than phase I. All subjects showed fewer responses during the blackouts of phase III than phase II. From phase III to Phase IV, subject 85 showed a decrease in blackout responses, while subject 597 showed no change, and subjects 1191 and 738 showed an increase.

Table 2 contains the results of the *t*-tests for related measures. During S1 significant response rate increases occurred in phase II as compared to phase I (induction) and phase IV as compared to phase III (contrast). During S2 a significant response rate increase occurred in phase II as compared to phase I. Significant response rate decreases, during S2, occurred in phase III as compared to phase II and phase IV as compared to phase III.

Figure 5. Reinforcement rates as a function of sessions for birds number 85, 1191, 597, and 738.

Rates during phases I, II, III, IV are shown for 5, 30, 5, and 5 days, respectively.

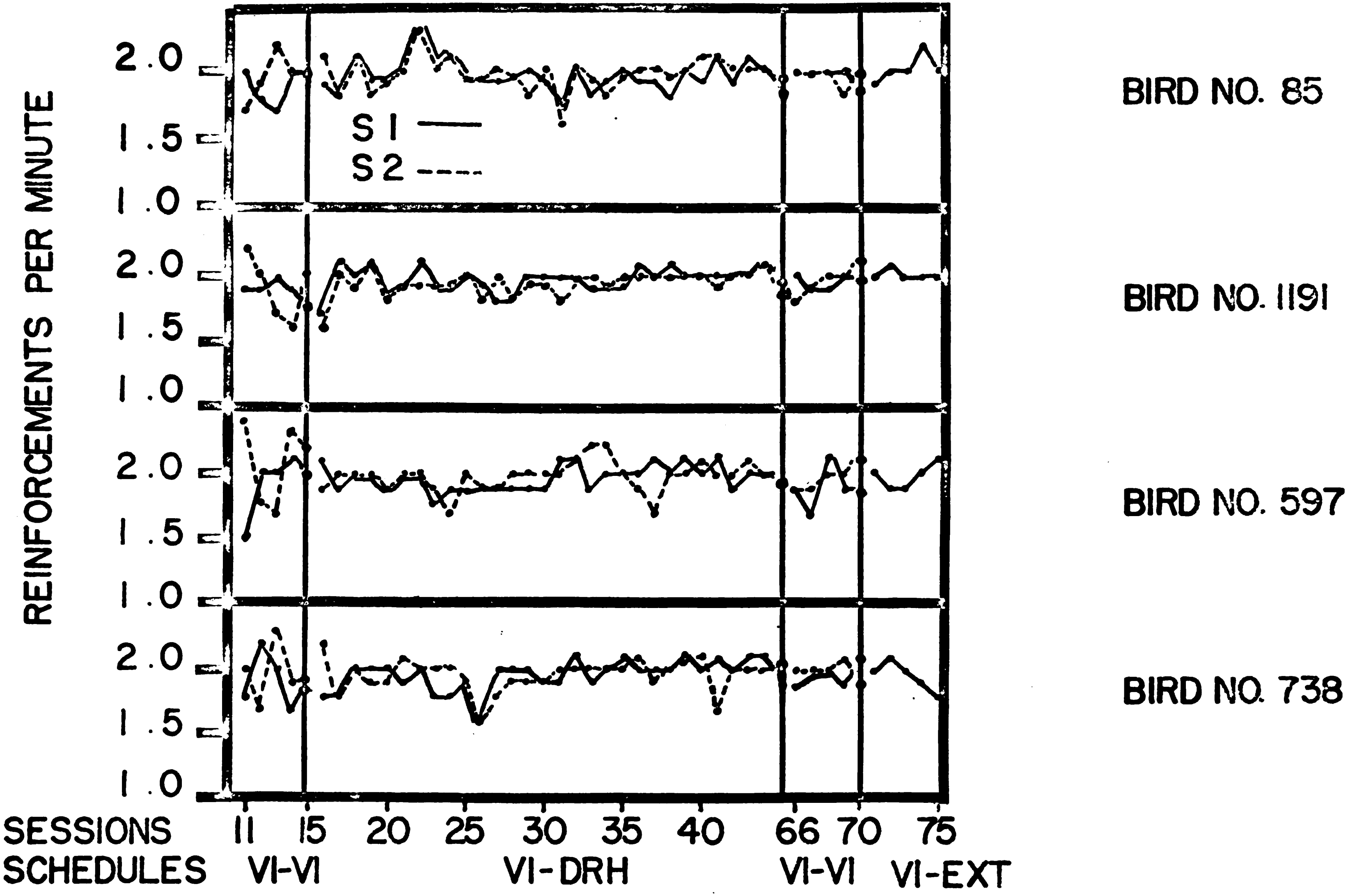
REINFORCEMENTS PER MINUTE
2.0
1.5
1.0
S1
S2
BIRD NO. 85
BIRD NO. 1191
BIRD NO. 597
BIRD NO. 738
SESSIONS
11
15
20
25
30
35
40
66
70
75
SCHEDULES
VI-VI
VI-DRH
VI-VI
VI-EXT

FIGURE 5

Table 1. Mean response rates during S1, S2, and the mean number of responses during the blackout (BO).

Phase	Bird 85			Bird 1191			Bird 597			Bird 738			Means		
	S1	S2	BO	S1	S2	BO	S1	S2	BO	S1	S2	BO	S1	S2	BO
I	33.4	30.9	1.8	47.3	49.6	8.4	28.6	32.2	5.6	29.2	31.4	4.4	34.3	36.0	5.1
II	44.1	53.8	9.2	60.2	81.4	14.3	41.2	56.2	7.0	49.4	68.0	10.3	48.7	64.8	10.2
III	41.9	41.3	7.2	50.5	57.3	9.0	39.9	36.6	5.0	34.4	35.5	7.6	41.7	42.8	7.2
IV	45.4	23.9	6.6	56.3	40.5	9.4	45.7	24.5	5.0	47.0	25.8	9.2	48.6	28.6	7.4

Phases I, II, III, and IV for all four subjects are shown. The response rates during phase I were computed from the last five days of the 15 day manipulation. Rates during phase II were computed from the entire 30 days of the manipulation. Rates during phase III were computed from the last 5 days of the 25 day manipulation. Rates during phase IV were computed from the last 5 days of the manipulation. Mean rates across subjects are also shown.

Table 2. t-tests on related measures.

Phase Comparison	t	p (df=3)
S1 during phase II as compared to phase I	6.94	.01
S2 during phase II as compared to phase I	8.84	.01
S1 during phase III as compared to phase II	2.09	not significant
S2 during phase III as compared to phase II	5.39	.01
S1 during phase IV as compared to phase III	3.63	.05
S2 during phase IV as compared to phase III	8.52	.01

The tests were based on the means in table 1.

DISCUSSION

The occurrence of positive induction during phase II failed to support Premack's 1969 hypothesis. This hypothesis stated that an increase in aversiveness, which could be effected through a rate contingency, in one component of a multiple schedule, would produce contrast in the second component of the multiple schedule. Although positive induction occurred in the present study, 3 experiments have shown that aversive stimulation (punishment) during S2 will produce contrast during a nonpunished S1.

Azrin (1960) studied the effects of punishment during a variable interval schedule. He used shock of varying intensities to punish responding during the interval. He observed that the rate of responding was greater following shocked responses than it was following non-shocked responses. Azrin and Holz (1961) found similar results when studying punishment during fixed interval (FI) reinforcement, for which the pigeon was reinforced for the first response after a fixed time interval elapsed. Although multiple schedules were not used in the above studies, the results indicate that punishing responses increase the rate of subsequent nonpunished responding. Brethower and Reynolds (1962) were able to produce contrast during S2 of a multiple variable interval schedule. When responses during S2 were shocked, there was an increase in the response rate during S1. Thus it was found that the results of the earlier studies generalized to a multiple schedule; i.e. punishment during S2 produced contrast during S1.

As evidence that a DRH contingency is aversive, Premack cited Fantino (1968) as having demonstrated aversive properties of rate requirement schedules through the use of a choice paradigm. When 2 stimuli were presented concurrently, a response to either stimulus resulted in the presentation of a second stimulus. Depending upon which of the initial stimuli was responded to, a rate requirement was, or was not, effected in the presence of a second stimulus. He found that the pigeons consistently preferred the initial stimulus which would not result in a response rate requirement. However, it must be noted that a preference paradigm is not a clear measure of aversiveness, but merely a measure of preference. Aversiveness and preference are not interchangeable concepts since one stimuli could be more reinforcing or aversive than a second stimulus. A better measure of aversiveness might be the elicitation of attack by the stimulus associated with the DRH contingency. Azrin et al.

(1966) demonstrated that attack against a target animal can be employed as an index of aversiveness. Premack further noted Terrace's 1966 work, in which he used a multiple VI DRL schedule of reinforcement. Terrace produced contrast when there was a rate requirement during S2, while maintaining constant reinforcement rates in the two components. The absence of behavioral contrast in the present study suggests that either the DRH contingency, a rate requirement, was not aversive or if it were, that aversiveness is not a sufficient condition for the production of behavioral contrast.

In the present study the response rate contingency was effective in raising the response rate during S2, i.e. induction occurred in all of the subjects. Travers (1963) accounts for the induction phenomenon through the process of generalization, i.e. a response learned in the presence of one stimulus generalizes to another stimulus. The increased rate of responding in the presence of S2 generalized to S1, and the response rate during S1 increased. Reynolds (1961a) produced positive induction in a multiple schedule. In his procedure, the animals were exposed to a multiple extinction-extinction schedule following a history of reinforcement on other multiple schedules. When the schedule was changed to a multiple extinction VI schedule, a response increase occurred in the VI component. This response rate increase in the VI was accompanied by a response rate increase in the extinction component. This interaction is positive induction. Negative induction occurred when a schedule was changed from a multiple extinction VI to a multiple extinction-extinction. A response decrease occurred during the new extinction component. This was accompanied by a response rate decrease in the original extinction component. Similar results were obtained using VR schedules. In the present study, the increase in the response rate during S2 of phase II was accompanied by an increase in the response rate during S1. As with Reynold's results, positive induction was obtained. It is noteworthy that studies designed explicitly to test induction phenomena are rare.

During phase III, the reduction in the rate of responding to both S2 and S1 has shown that the increased rates during phase II were not permanent, but due rather to the temporary DRH rate requirement and the temporary induction effect. Note that the reduction in the response rate during S2 did not cause an increase in the response rate in S1; i.e. contrast. This might be interpreted as evidence against Terrace's 1966 suggestion that a response rate reduction is alone sufficient for the production of behavioral contrast. However, this decrease during both S1 and S2 might mean that the behavioral contrast phenomenon does not generalize to situations in which the response rates are artificially high as a result of the previous experimental manipulations.

Other experiments also failed to obtain contrast in the absence of a rate requirement, even though a response rate reduction occurred during S2. Wilke (1970) used a multiple VI FVI (free variable interval) schedule to produce a decrease in the response rate during S2. During the FVI component, free reinforcements were given to the pigeon on a variable interval schedule, i.e. there were no behavioral requirements for obtaining reinforcement. The failure to obtain contrast under this paradigm supports Premack's rate requirement theory, for the rate reduction during S2 was obtained without a rate requirement such as DRL. Reynolds (1961a) found similar results when a multiple VI DRO (differential reinforcement of other behaviors) schedule was used. Under this paradigm, a behavior other than responding was reinforced. Again, a rate reduction during S2, in the absence of a rate requirement, failed to produce contrast during S1. The failure to obtain contrast in these studies may not be supportive of Premack's theory, for negative findings are always extremely difficult to interpret.

During phase IV, the extinction of responding to S2 resulted in the occurrence of behavioral contrast. This suggests that extended training on a multiple schedule does not prevent contrast from occurring, and also demonstrated that the failure to obtain contrast during phases II and III was not a result of any peculiar characteristics of the birds themselves. The result found in this phase was essentially a replication of Reynold's 1961a finding.

Responses during the 5 second blackouts between stimulus presentations varied according to the particular phase that the subject was in. An increase occurred during phase II blackout responses as compared to phase I blackout responses. The general increase in both S1 and S2 responding accounts for this increase. A decrease occurred during phase III blackout responses as compared to phase II. The general decrease in S1 and S2 responding during phase III accounts for this. During phase IV, mixed results in blackout responding occurred. S1 responding increased while S2 responding decreased during this period.

At present, it must be concluded that behavioral contrast occurs only under very specific circumstances. Neither response rate reductions nor rate contingencies are alone sufficient for its production. In the present study, both a contingency produced response rate increase and a response rate decrease failed to produce contrast, when reinforcement rates were maintained. A response rate decrease, did however produce contrast. Under other circumstances, however, rate contingencies and response

rate reductions, with maintained reinforcement rates, have produced behavioral contrast. What these paradigms, as well as certain time out and shock paradigms, have in common, remains an open question.

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APPENDIX

APPENDIX A

Rate Requirement Contingencies (Responses/Seconds) and Requirement Quotients during Phase II

	Subject Number							
	85		1191		597		738	
Session	R/S	Quot.	R/S	Quot.	R/S	Quot.	R/S	Quot.
16	5/7	0.7	8/6	1.3	5/6	0.8	5/7	0.8
17	6/6	1.0	8/5	1.6	6/7	0.8	6/6	1.0
18	6/5	1.2	8/4	2.0	6/7	0.8	6/5	1.2
19	7/5	1.4	8/3.5	2.3	7/7	1.0	5/3	1.7
20	4/2	2.0	8/3.5	2.3	6/5	1.2	5/3	1.7
21	7/4	1.8	9/3.75	2.4	6/5	1.2	3/1	3.0
22	8/4	2.0	9/3.5	2.6	5/3	1.7	6/3	2.0
23	8/3.5	2.3	9/3.5	2.6	5/3	1.7	7/3	2.3
24	8/3.5	2.3	9/3.5	2.6	3/1	3.0	9/4	2.3
25	9/3.5	2.6	9/3.5	2.6	6/3	2.0	9/4	2.3
26	9/3.5	2.6	9/4.5	2.0	7/3	2.3	9/4	2.3
27	9/3.5	2.6	3/1	3.0	9/4	2.3	9/4	2.3
28	9/3.5	2.6	9/4	2.3	9/4	2.3	9/4	2.3
29	9/3.5	2.6	9/4	2.3	10/4	2.5	10/4	2.5
30	3/1	3.0	10/4	2.5	10/4	2.5	10/4	2.5
31	9/4	2.3	9/4	2.3	10/4	2.5	6/2	3.0
32	9/4	2.3	9/4	2.3	10/4	2.5	6/2	3.0
33	10/4	2.5	10/4	2.5	10/4	2.5	3/.75	4.0
34	10/4	2.5	10/4	2.5	6/2	3.0	6/2	3.0
35	10/4	2.5	9/4	2.3	6/2	3.0	6/2	3.0
36	10/4	2.5	10/4	2.5	10/4	2.5	6/2	3.0
37	11/4	2.7	10/4	2.5	3/.75	4.0	6/2	3.0
38	11/4	2.7	6/2	3.0	10/4	2.5	6/2	3.0
39	11/4	2.7	9/4	2.3	10/4	2.5	8/3	2.7
40	11/4	2.7	9/4	2.3	6/2	3.0	3/1	3.0
41	6/2	3.0	10/4	2.5	3/1	3.0	8/3	2.7
42	10/4	2.5	6/2	3.0	8/3	2.7	9/3.5	2.6
43	10/4	2.5	6/2	3.0	4/1.2	3.3	4/1.5	2.7
44	10/4	2.5	7/2.2	3.2	3/1	3.0	3/1	3.0
45	10/4	2.5	9/4	2.3	9/4	2.3	8/3	2.7