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AUTHOR Ascione, Frank R.; Burchard, John D.
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ABSTRACT

Through an experimental analysis, this study demonstrates characteristics of both observer-produced and punishment-produced suppression of cheating behavior. The research procedure, designed to eliminate the interpretative difficulties of prior, comparable research, is fully elaborated. Two delinquent, retarded, adolescent boys served as subjects. Results indicate that both surveillance and punishment decrease the rate of cheating; however, while punishment produced more longlasting suppression, it also resulted in a disruption of the subjects' performance, reflected in decreased accuracy and bursts of responding, which surveillance did not produce. Implications are discussed. (Author/TL)

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Effects of Surveillance and Punishment
on the Cheating Behavior of Two
Delinquent Retardates¹

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Frank T. Ascione and John L. Burchard

University of North Carolina and University of Vermont

In the past ten years, research on cheating and resistance to deviation in children has become more experiential as distinct from correlational in nature. The role of punishment in suppressing cheating has been given the most attention. The typical procedure that is employed, for example in the studies by Aronfreed (1968) and Parke and Walters (1967), consists of four steps: first, the child is presented with pairs of toys differing in attractiveness and is told that certain toys should not be touched. Second, over a number of training trials the child is asked to choose one of the toys from each pair and describe it. Third, if the child picks the more attractive of the two, punishment is administered in the form of a loud buzzer and/or a verbal reprimand. Finally, a test period immediately follows in which the experimenter exits on a pretext leaving the child alone with two or more toys. The frequency and duration of the child's manipulation of prohibited toys are taken as measures of suppression.

When one examines the studies using such a procedure, factors which limit the interpretation of results become evident. In the first place, measures of the child's ability to discriminate between prohibited and nonprohibited toys are lacking. Secondly, the testing

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period is brief and is only administered once leaving open to question the reliability and durability of experimental effects. Finally, although manipulation of both prohibited and nonprohibited toys is recorded, analysis of the latter, manipulation of nonprohibited toys, is rarely included. The present study employs a procedure devised by Burchard (1970) which eliminates these interpretative difficulties 1) by assessing the subject's ability to discriminate prohibited from nonprohibited behavior, 2) by repeatedly administering the test condition, and 3) by analyzing both prohibited and nonprohibited behavior. Our purpose was to determine how the suppression resulting from surveillance compares with the suppression that may be produced by punishment with specific regard to the duration of suppression and qualitative and quantitative changes in the nonprohibited response.

The subject was brought to a room similar to the one depicted in Fig. 1 and was introduced to the experimental task in the context of a game. He was told that lifting the lid on the box marked "A" would reveal whether an enclosed light was on or off. The experimenter then explained that if he pressed the button on the panel marked "C" while the light in the box was on, a green light above the button would flash indicating that he had made a correct response. If, however, he pressed the button when the light in the box was off, a red light would flash signifying an incorrect response. The schedule which controlled the light in the box was a DRL 15 sec., 5 sec. limited hold. In other words, after 15 sec. of no button presses, the light in the box came on and stayed on for 5 sec. or until a button press was made. The first button press within this 5 sec. period always produced the green light flash and reset the timer controlling the light in the box; thus, only one correct response was possible during the time in which the light in

the box was on. Button presses prior to the onset of the light in the box, that is, incorrect responses, also reset the timer controlling the light and thus delayed the light's onset. If no button presses were made during the 5 sec. in which the light was on, the light went off and did not come on again until 15 sec. elapsed without a button press.

Once the subject demonstrated his understanding of the task, the experimenter brought to his attention a green and a yellow light, not shown in the figure. These were mounted on the wall facing the subject. The experimenter explained that when the green light was on, he would get a candy and a token, from the chute marked D, every time he made a correct response. If the yellow light was on, however, a correct response would produce a candy and token only "once in awhile". Specifically, the green light indicated a schedule of continuous reinforcement or crf schedule while the yellow light indicated a VR 4 or variable ratio schedule of reinforcement during which reinforcement followed, on the average, four correct responses.

Up to this point the subject couldn't do anything wrong; thus, a prohibition was introduced; the subject was told that when either the green or the yellow light was on, he was not to use the lid but rather had to guess when the light in the box was on. The only time he was permitted to use the lid to look for the light in the box was when both schedule lights were off. Therefore, anytime the subject raised the lid of the box when either the green or the yellow light was on, he was making a prohibited or "cheating" response. This assumes the subject has understood the instructions. We will examine this assumption later in our discussion of the results.

Following these instructions, the experimenter left the subject telling him to go ahead and play the game. Programming and recording

equipment was located in a room adjacent to the subject's. During the course of this study, both surveillance, in the form of a human observer, and punishment, in the form of response cost, were manipulated.

Two boys residing in an institution for the mentally retarded participated in this study. Both were involved in a special training program based on a token economy. Subject 1 was 18 years old and had an IQ of 64 as measured by the WAIS. He was functioning academically at the third grade level and had a history of antisocial behavior which included assaulting peers, theft from staff and peers, and numerous unauthorized institution leaves. His performance is shown in Fig. 2. The ordinate indicates the number of trials, that is, the number of correct and incorrect responses that were made with the lid raised. The numbers on the abscissa refer to consecutive schedule components. The schedule of components: for each session began with a training component, indicated by squares, during which time both the green and the yellow lights were off and lifting the lid was permitted. Following this training component, a crf component, shown as triangles, alternated with a VR component, shown as circles. Crf and VR components were in effect twice per session. Although crf and VR components are depicted as occurring simultaneously, they in fact occurred in sequence, for example, crf, then VR, then crf, then VR. Trials with a lid response during crf and VR were designated as the cheating responses since lifting the lid during these components had been prohibited. Since VR components lasted 6 min. while crf and training components lasted 2 min. each, the values for crf and training were multiplied by 3 to facilitate comparison.

Components 1 through 8, representing 4 sessions, show this boy's baseline performance following two initial practice sessions in which the prohibition instructions were repeated. Characteristic of this subject's

performance is a rapid acquisition of a high rate of cheating with little differential effect of the two schedules of reinforcement. During training, an average of 20 trials involved lid responses. The subject used the lid during crf and VR almost as often as during training even though using the lid during crf and VR had been prohibited. During the 9th components, marked "O₁", an observer who was a staff member familiar to the subject simply sat with the subject during the first half of the session. The rationale for this manipulation was to establish the cheating response as deception on the part of the subject. If he cheated when the observer was absent but did not cheat when the observer was present, it would be established that the subject was choosing to violate the prohibition. The introduction of an observer resulted in complete suppression of cheating in VR but only a moderate reduction of cheating in crf. The possibility that the boy had not comprehended the instructions led to a repetition of the original instructions and the introduction of a second observer, "O₂". The data demonstrate this to have been effective in clearing up any misunderstanding; the boy cheated when the observer was absent but cheating was completely suppressed in both crf and VR when the observer was present. The observer manipulation was performed 9 times. The overall effects can be seen in Fig. 3 which shows, for crf, the average percentages of correct and incorrect responses which were made during the 8 baseline components, bar graph A, during the last seven components with an observer present, bar graph B, and finally during the first through fifth components following the removal of the last seven observers, bar graphs 1 through 5.

The left bar in each pair represents the percentage total correct responses with the unshaded area indicating the proportion of that percentage involving cheating. The right bar represents the percentage incorrect responses made with cross-hatching indicating incorrect responses

with interresponse times, or IRTs, greater than 5 sec. This arbitrary differentiation of incorrect responses with IRTs less than 5 sec. from those with IRTs greater than 5 sec. separated bursts of incorrect responses from more spaced responding, spaced responding being more efficient in a DRL schedule. Thus, during baseline, bar graph A, 94 percent of the responses were correct and all involved cheating. Looking now at performance during surveillance, bar graph B, there is a marked decrease in correct responses to 23 percent. All these responses, however, were made without cheating. Of the 77 percent incorrect responses during surveillance, approximately two-thirds of that percentage involved IRTs greater than 5 sec.; thus, spaced responding predominated. Looking now at the last five pairs of bar graphs, during the first component following surveillance, bar graph 1, cheating recovered to 50 percent of the baseline rate and steadily increased through the fifth component following surveillance to about 75 percent of the baseline rate. In addition, the proportion of correct responses without cheating remained relatively stable, more so than the interresponse time for incorrect responses. Data for VR are redundant in all respects and will not be presented.

Fig. 4 show baseline data for Subject 2. This boy was 16 years old and had an IQ of 79 on the WAIS. He also functioned academically at a third grade level and had a history of antisocial behavior similar to Subject 1's. This figure indicates that the crf and VR schedules controlled differential rates of cheating for this subject, with cheating in crf more frequent than in VR. A similar misunderstanding of instructions also became evident with this subject and was corrected in the same fashion as with Subject 1. Fig. 5 shows that following the 33rd component cheating gradually decreased in frequency. The limited hold of the DRL schedule was shortened from 5 sec. to 1 sec. at component 45 thus increasing

the difficulty of the task. Following this manipulation, cheating increased in both crf and VM although the rate of crf remained higher. This graph also indicates the temporary nature of suppression produced by surveillance.

As shown in Fig. 6 for Subject 1, the first punishment, indicated by "P₁", occurred following component 31. Punishment consisted of a response cost or fine of 15 tokens, approximately 1/10 of the subjects' daily earnings. Punishment was contingent upon the first cheating response in a preselected component. This resulted in nearly complete suppression through component 33 at which point partial recovery occurred. The second punishment, "P₂", produced more short-lived suppression than the first. Fig. 7 shows, for this subject, the average correct and incorrect response percentages during crf for 4 consecutive blocks of 5 components following the two punishments. These data are relevant for comparing the effects of punishment and surveillance on accuracy in the absence of cheating. The first block of components, 1 through 5, where suppression of cheating was most complete, shows that 96 percent of the responses were incorrect and only a fifth of this percentage involved spaced responding. Recall that during surveillance-produced suppression, 2/3 of the incorrect responses were spaced responses. Also, 2 percent correct response without cheating during punishment-produced suppression is in marked contrast to the 23 percent correct responses without cheating during surveillance-produced suppression. Cheating returned to baseline level by the 20th component following punishment but bursts of incorrect responses predominated over spaced responding. To indicate the degree of disruption associated with punishment, Subject 1 emitted a burst of 297 incorrect responses during a single crf component following punishment.

Fig. 6 shows the effects of punishment on Subject 2's performance. The first punishment produced complete suppression for 3 components followed by recovery which also indicated differential schedule control; recovery being more rapid during crf. The second punishment produced total suppression for 9 sessions. Evidence of disruption for this subject included a gradual deterioration of accuracy and his expression of dissatisfaction with and resistance to further participation in the experiment.

This study has shown that both surveillance and punishment decreased the rate of cheating. Although punishment produced more longlasting suppression, it also resulted in a disruption of the subjects' performance, reflected in decreased accuracy and bursts of responding, which surveillance did not produce. This suggests that if accuracy or learning a discrimination is important, the disruption produced by punishment may be a side-effect incompatible with that objective. Following punishment, the subject may be less capable of making the discrimination and therefore more likely to revert to cheating. One way of enhancing the therapeutic use of punishment would be to initially decrease the difficulty of the task thus making it easier for the individual to succeed in the task without cheating; then, at some later time, the task could be returned to its original level of difficulty. We also found that, of the two experimenters running the subjects, suppression following punishment was more pronounced during sessions run by the experimenter who had actually administered punishment in contrast to the one who had not.

An obvious alternative to punishing the subject for cheating is reinforcing him for not engaging in the prohibited behavior. A study now in progress is being conducted to examine the suppression that may be produced by reinforcement for not cheating.

Finally, the procedure employed in this study, by revealing subjects' misunderstandings during the first observation, has shown that an objective determination of the subject's understanding of a prohibition should be preliminary to any classification of the subject's behavior as cheating. In addition, the procedure has demonstrated that analysis of both prohibited and nonprohibited behavior can provide information that is both necessary and valuable for assessing the nature of the suppression of cheating produced by various experimental operations.

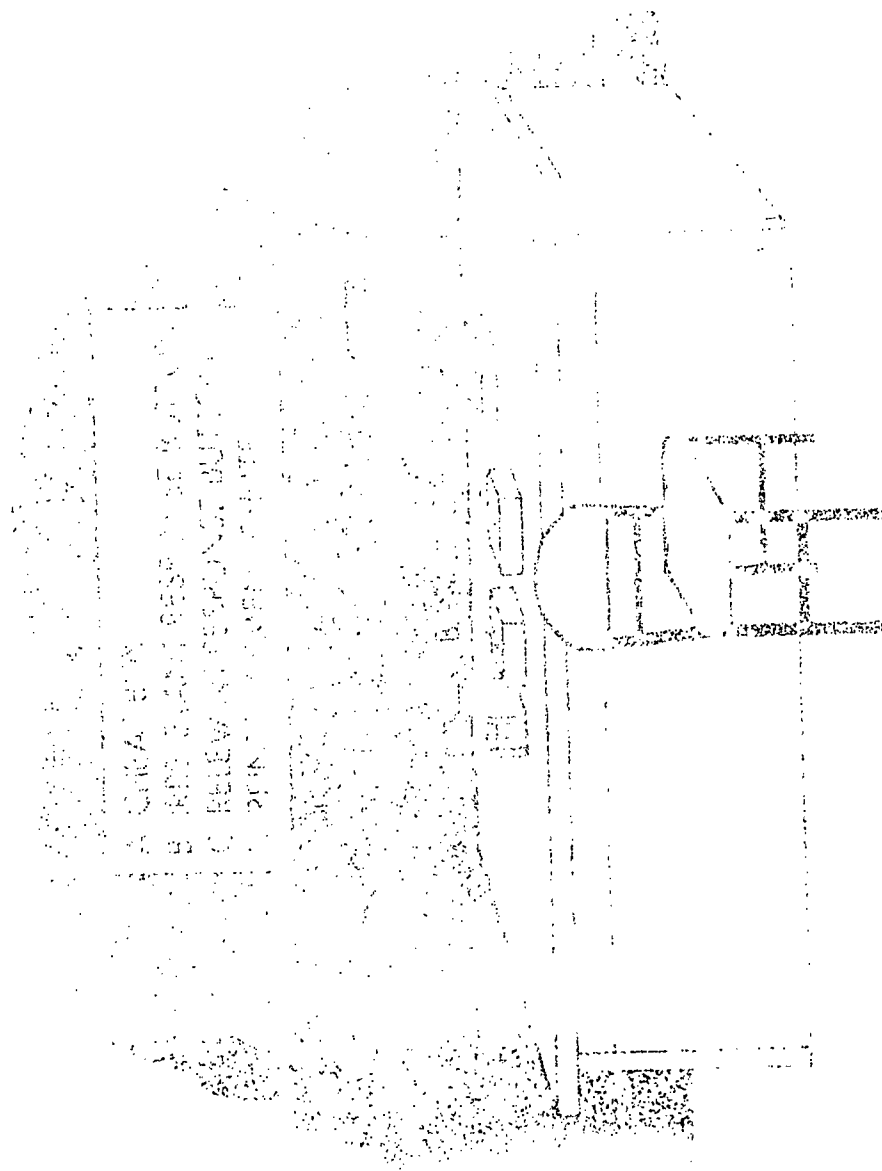
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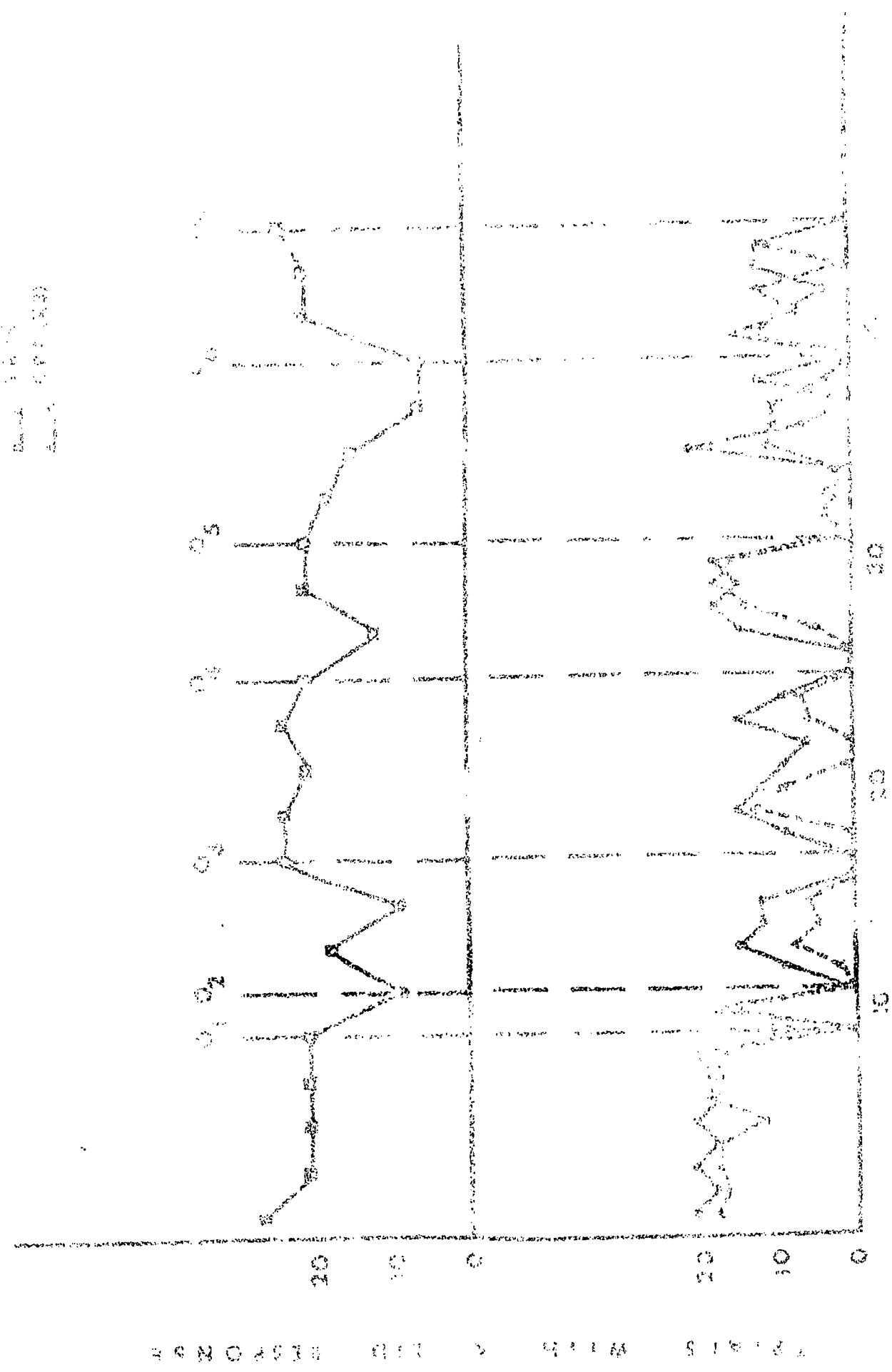
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STATION TRAINING (K2)
1954
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CONSECUTIVE SCHEDULE COMPLETION

POINTS PER HOUR

S-1

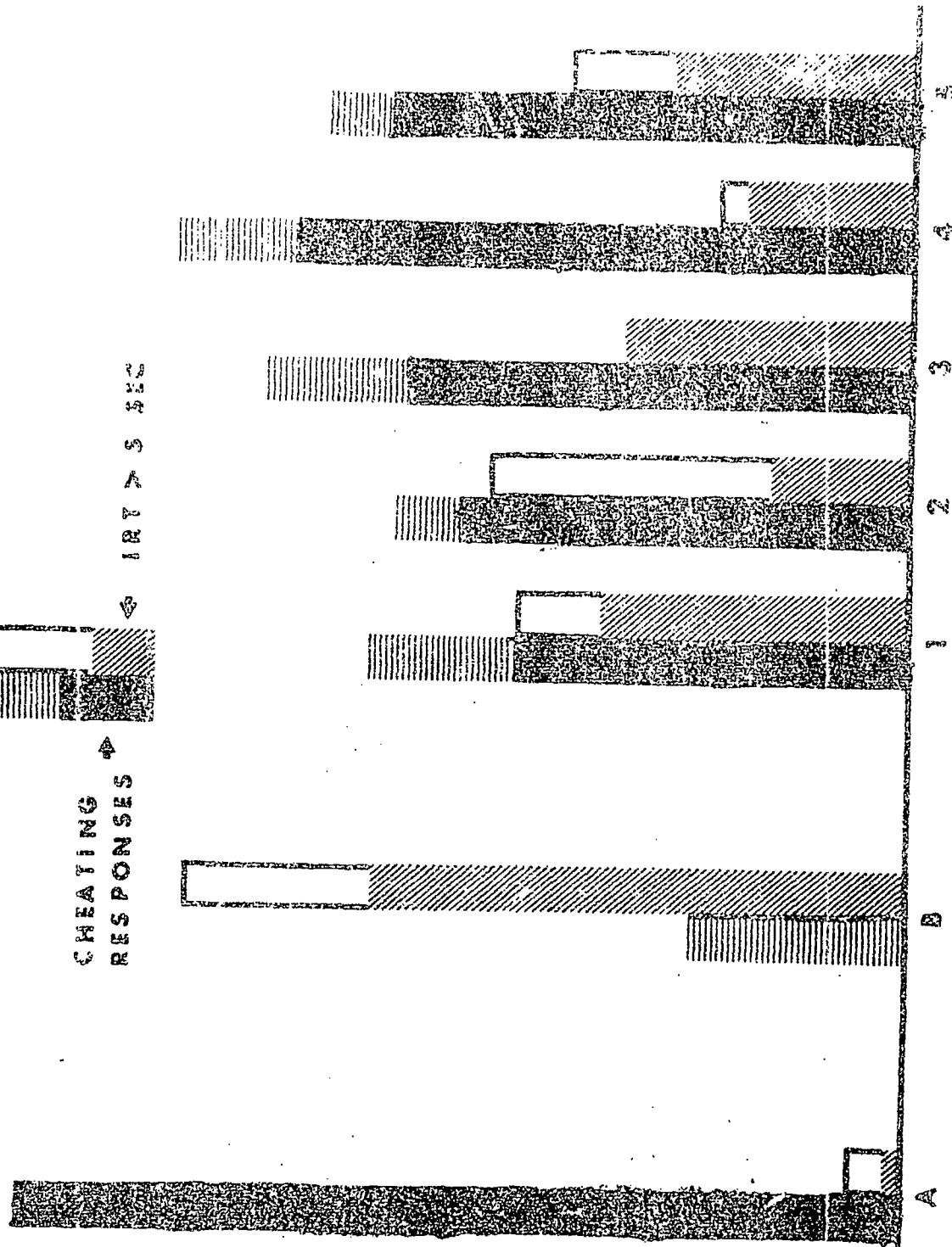
CORRECT RESPONSES
INCORRECT RESPONSES

CHEATING RESPONSES

IRT > 5 SEC

CRF

100
80
60
40
20
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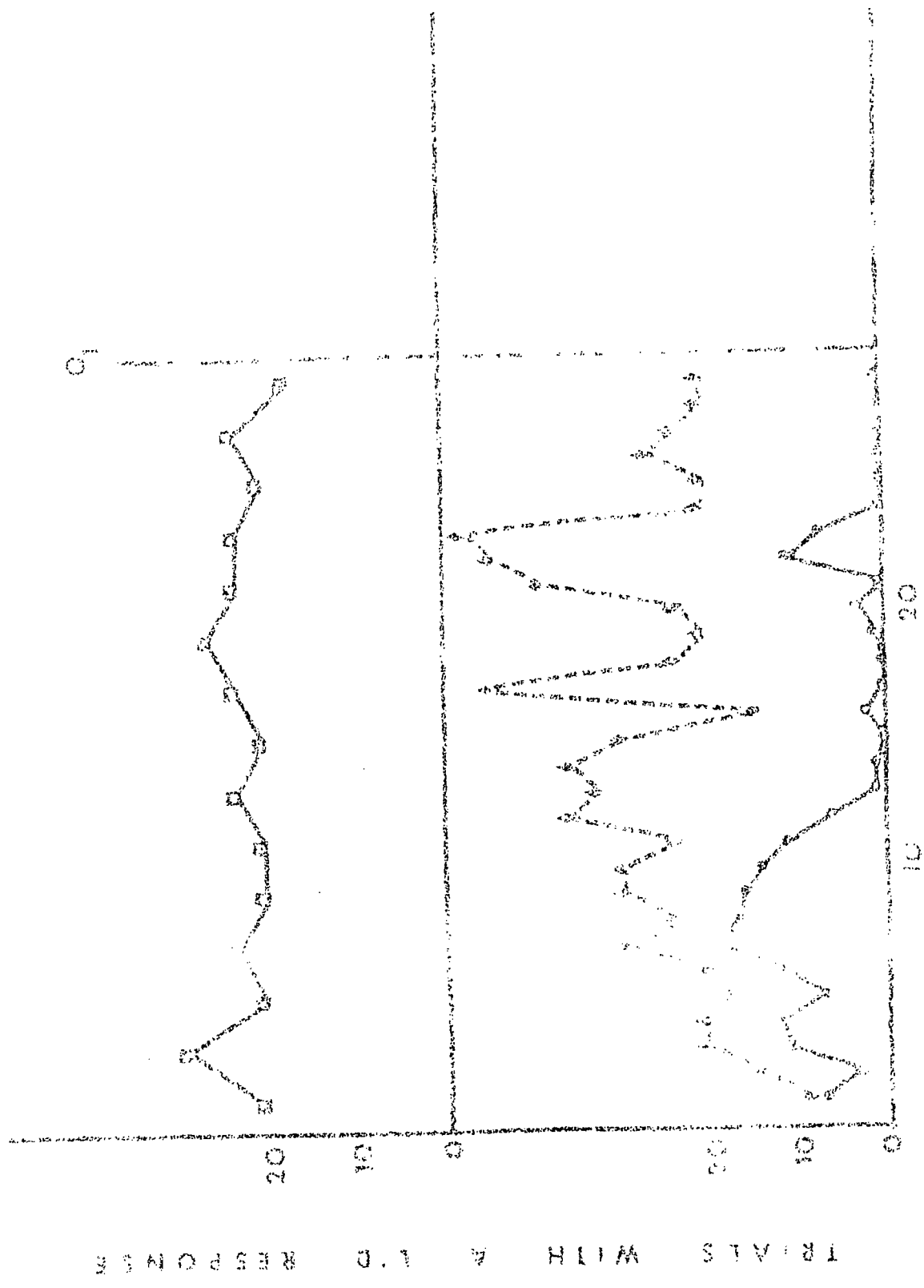
BASELINE DURING OBSERVER
POST OBSERVER

Fig. 3

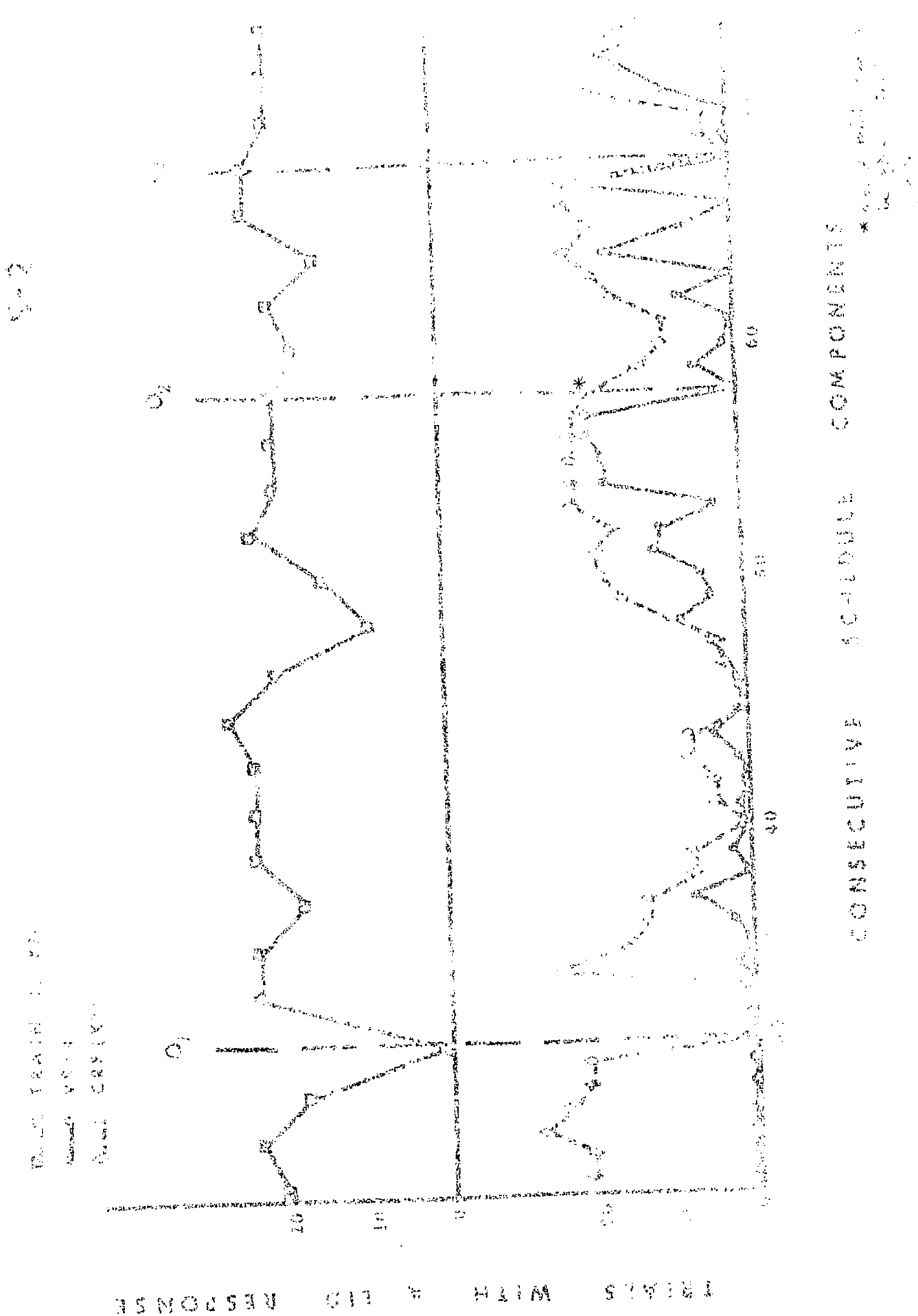
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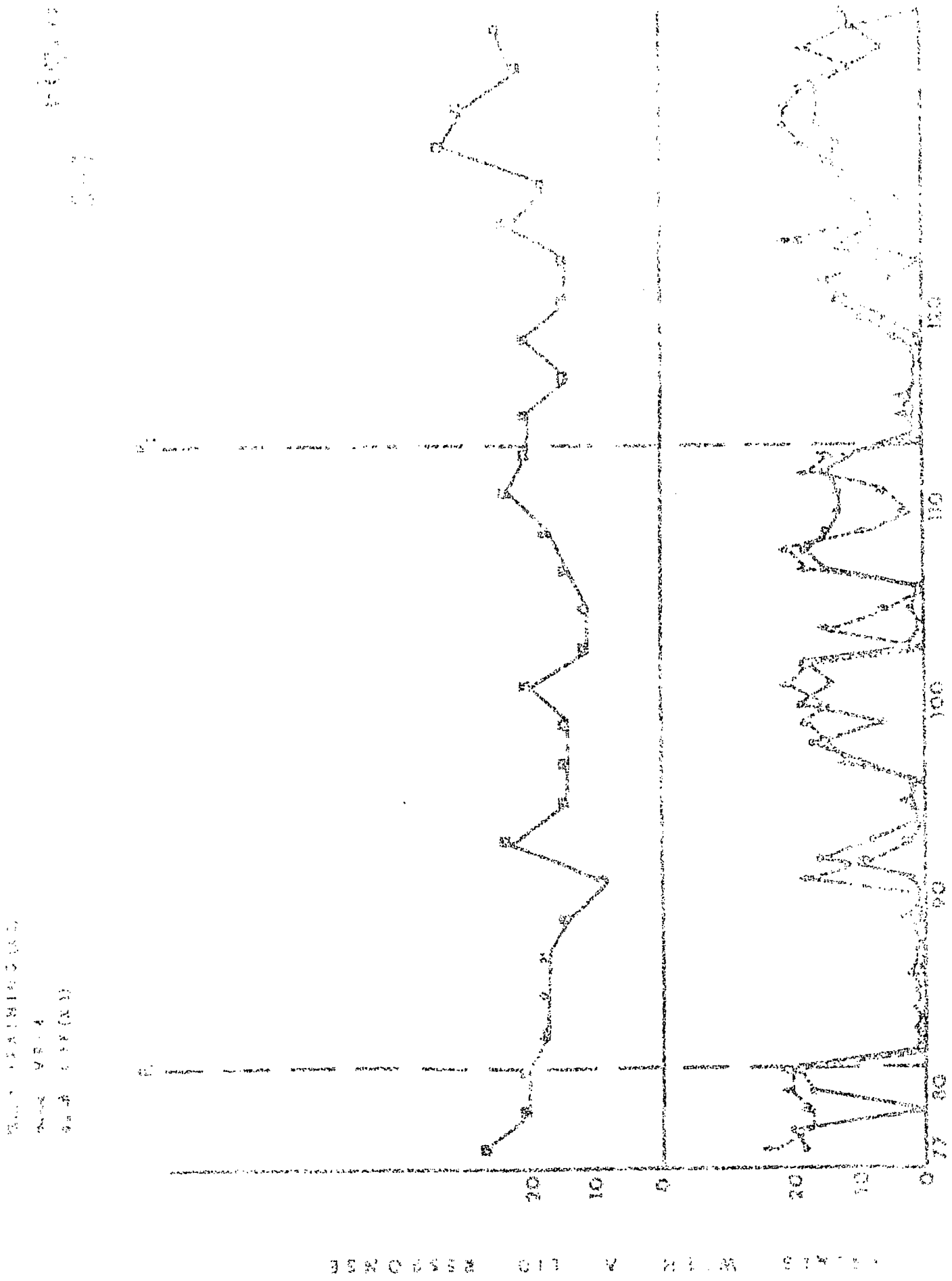
Group 1
Group 2
Group 3

5-2



CONSECUTIVE SCHEDULE COMPONENTS





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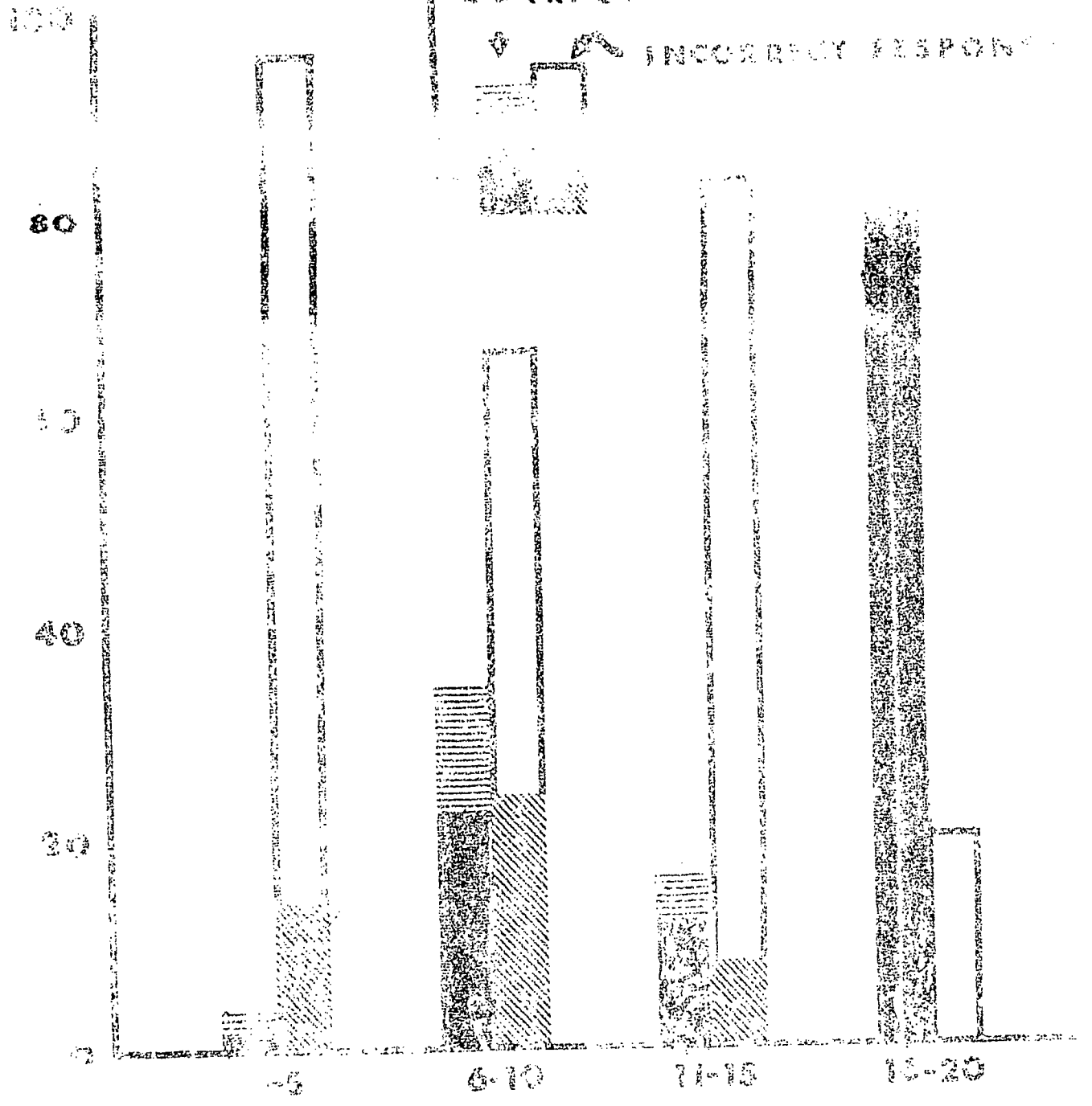
Q. 11
CRA

CHEATING RESPONSES

CORRECT RESPONSES

INCORRECT RESPONSES

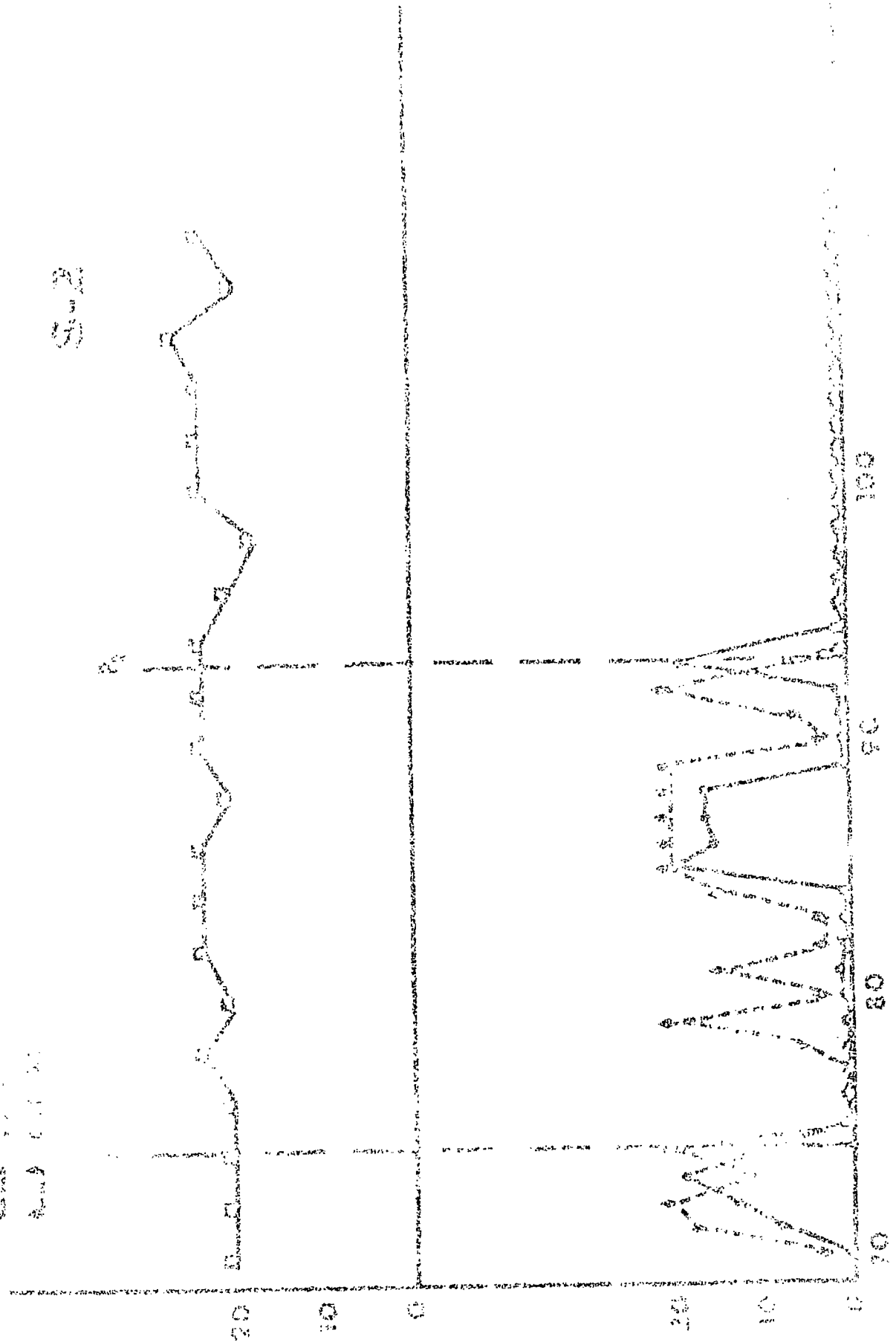
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POST-PUNISHMENT COMPLIMENTS

ADDENDUM SCHEDULE CONSECUTIVE

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TRIALS WITH A 10 MINUTE