

## Seven Successive Saturdays

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This investigation examined effectiveness of teaching physical education preservice teachers to correctly discriminate pupil throwing. Three teachers served as subjects in this study. Teachers were given one traditional teaching day before intervention occurred. During intervention, teachers were taught to discriminate between correct and incorrect pupil throws. Following intervention, both teachers and pupils were video and audio taped, and systematically observed to identify correct teacher discrimination of pupil throws. Results indicate an increase in the frequency of correct teacher identifications and a decrease in the frequency of incorrect identifications. Implications are discussed.

Most physical education teacher education programs in the United States include a set of one on one, or one on two, teacher-pupil teaching experiences. These experiences typically involve time spent once or twice weekly in several different physical education settings. For example, at The Ohio State University, settings include 30 minutes spent in a swimming pool teaching swimming skills, 30 minutes spent teaching gymnastics skills (e.g., balances and rolls), and 30 minutes spent teaching fundamental movement skills (e.g., kicking, striking, throwing, and catching). In general, the teacher spends between 5 and 15 minutes on any one task in each setting. Preservice teachers are required to teach young children between seven and eight years of age each Saturday morning for a quarter. During this time it is common for teachers to be systematically observed using audiotapes (via wireless microphones), videotape, and direct observation by several observers including supervisors, parents, and researchers. Data are collected at least once per task per activity (i. e., swimming, gymnastics etc.), each day. Due to administrative and logistical problems, the ten weeks of the quarter are inevitably reduced to seven weeks, or more specifically seven Saturdays.

Teaching teachers to correctly analyze and appropriately respond to pupils in these settings represents two of the principal goals of this preservice teaching experience. In previous systematic observations of teachers in these settings, the researchers had determined that teachers typically failed to discriminate (almost without exception) the correct performance and were also non-con-

tingent with feedback they provided (e.g., prompts, attempts at reinforcement, etc.). The teachers responded in much the same way after each pupil performance without regard to the performance of the pupil. This study investigated the effects of teaching preservice teachers to discriminate correct pupil performances. Standard Celeration Charts show the teachers' progress in correctly discriminating their pupils' behavior.

### Method

#### *Subjects and Setting*

The subjects were three female students majoring in physical education, but identified by the professor in charge of this class as being at risk of failing the class. These preservice teachers were in their first or second year of the physical education program at The Ohio State University. Each teacher was assigned two, eight-year-old children. The eight-year-olds were enrolled in the University's Developmental Movement Education Program, designed to teach elementary school-aged children's basic motor skills in several activities including, gymnastics, swimming, sports, and games.

#### *Materials*

Archery-like targets and several buckets of tennis, nerf and rubber balls were used.

The authors gratefully acknowledge Dr. Jacqueline Herkowitz and the teachers and pupils who participated in this research.

### *Procedures*

Prior to the start of the study, teachers performed a component analysis of the throwing skill, and assessed their pupils' throwing. After one day of traditional teaching, the teachers were taught to discriminate correct pupil throws. Teachers were required to discriminate each others' throwing correctly before the next phase of the study began. Also, teachers were required to discriminate the researchers' behavior each week prior, usually the day before, to the teaching session. These discriminations served to calibrate both the researchers' and teachers' behavior throughout the study.

During the study when students performed the skill correctly, the teacher praised and in some cases gave students stickers as reinforcers. When a pupil performed the skill incorrectly, the teacher was required to remain silent and not move. The teacher could model and ask the child to practice the correct response only after three incorrect performances in a row were observed.

### *Precision Teaching Procedures*

The teachers and pupils were video and audio-taped throughout the study. Researchers using these tapes first coded the pupil's tool skill (a component of the throw) as either correct or incorrect, and then coded the teacher's response as either a "Say" or "No Say" (movement cycle) condition. If the "Say" or "No Say" conditions corresponded to the correct pupil performance, the teacher's behavior was coded as correct. If there was no correspondence, the teacher's behavior was coded as incorrect. Standard Celeration Charts were used to display the number of correct and incorrect correspondences over a constant 10 minute counting period for each of the seven Saturdays of the study. During the weekly calibration sessions, teachers were given feedback regarding the correct and incorrect responses from the previous week.

### *Accuracy Measures*

As mentioned, both teachers and pupils were videotaped. The video camera was placed so that a pupil's behavior could be observed at all times. A teacher, almost always in view of the lens, wore a wireless microphone so that her verbal behavior could at all times be recorded. The videotapes were examined by two researchers using the component analysis provided by the

preservice teachers; both pupil and teacher performances were assessed. The correct and incorrect correspondence was 100%.

## Results

### *Standard Celeration Charts*

Charts 1 through 3 represent the correct identification and response (i.e., "Say"/"No Say") by three preservice teachers to the ball throwing behavior of two students they were instructing. The data represent the correct and incorrect "Say/No Say" responses counting period.

#### *Chart 1*

After a one session baseline, Bev's data from Chart 1 revealed a "Take Off" learning picture. The number of correct "Say/No Say" responses per 10 minute counting period "jumped up" immediately after the discrimination training was implemented (intervention). Bev's scores for correctly identifying discriminations ranged from 26 to 70 with a median of 54 during the six intervention sessions. During intervention, the celeration of correct "Say/No Say" responses per 10 minute counting period was  $\times 1.25$ . The overall bounce in the data during intervention revealed a performance change of  $\times 3.0$ . This performance change indicated gradual improvement in discriminations and responses as Bev became more accustomed to the intervention. All learning opportunities (i.e., errors) remained below five with the exception of one outlier that occurred on session three. Learning opportunities that were below five were deemed inconsequential by the research team in terms of overall teacher performance.

#### *Chart 2*

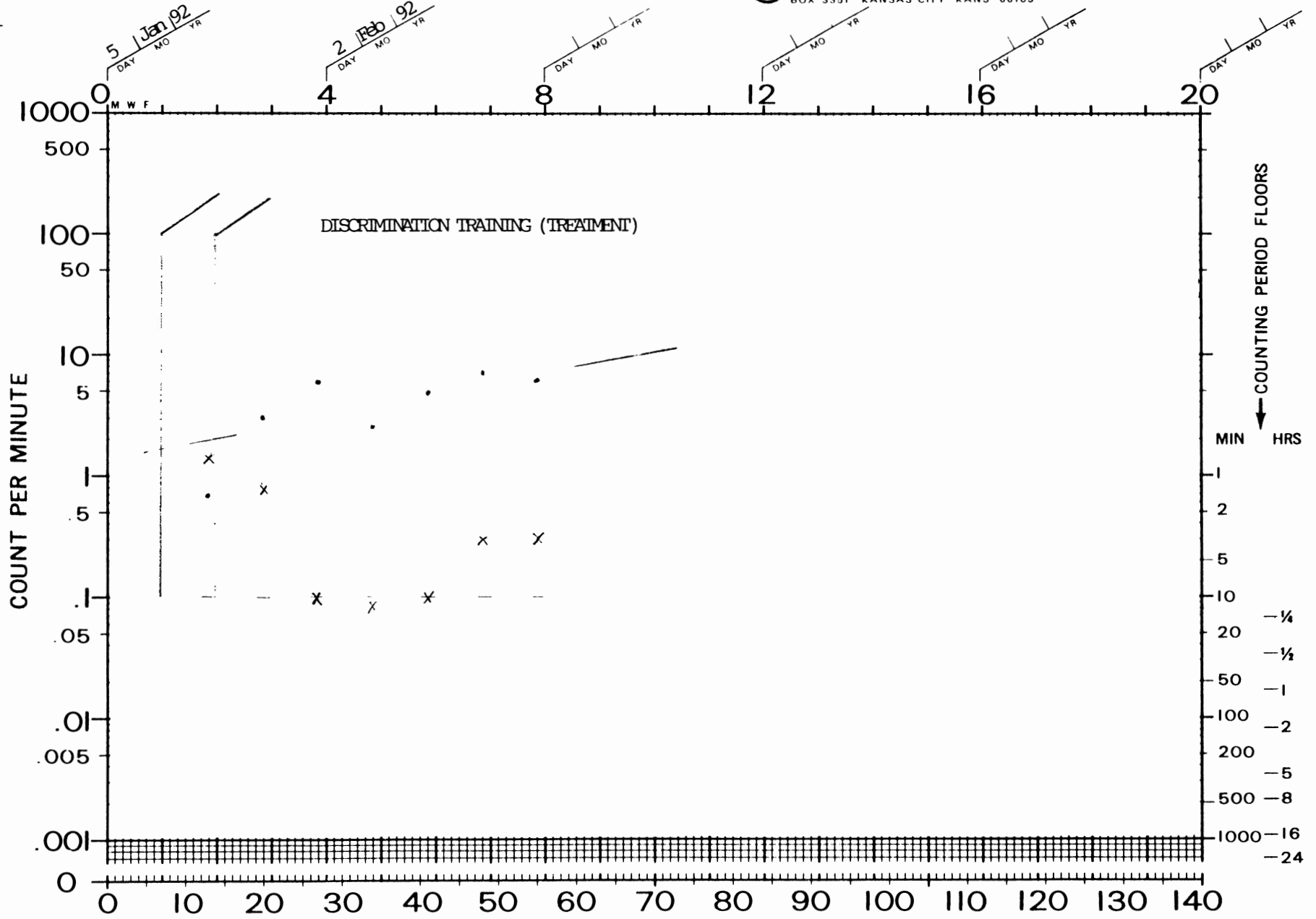
After one session baseline, Sue's data from Chart 2 revealed a "Take-Off" learning picture similar to that on Chart 1. The number of correct "Say/No Say" responses per 10 minute counting period slightly improved immediately after the discrimination training was implemented. Sue's scores for correctly identifying discriminations ranged from 30 to 60 with a median of 42 during the six intervention sessions. The overall bounce in the data during intervention revealed a performance change of  $\times 2.0$ . This performance change

CHART #1

CALENDAR WEEKS



DAILY BEHAVIOR CHART (DCM-9EN)  
 8 CYCLE - 140 DAYS (20 WKS.)  
 BEHAVIOR RESEARCH CO.  
 BOX 3351 KANSAS CITY KANS 66103



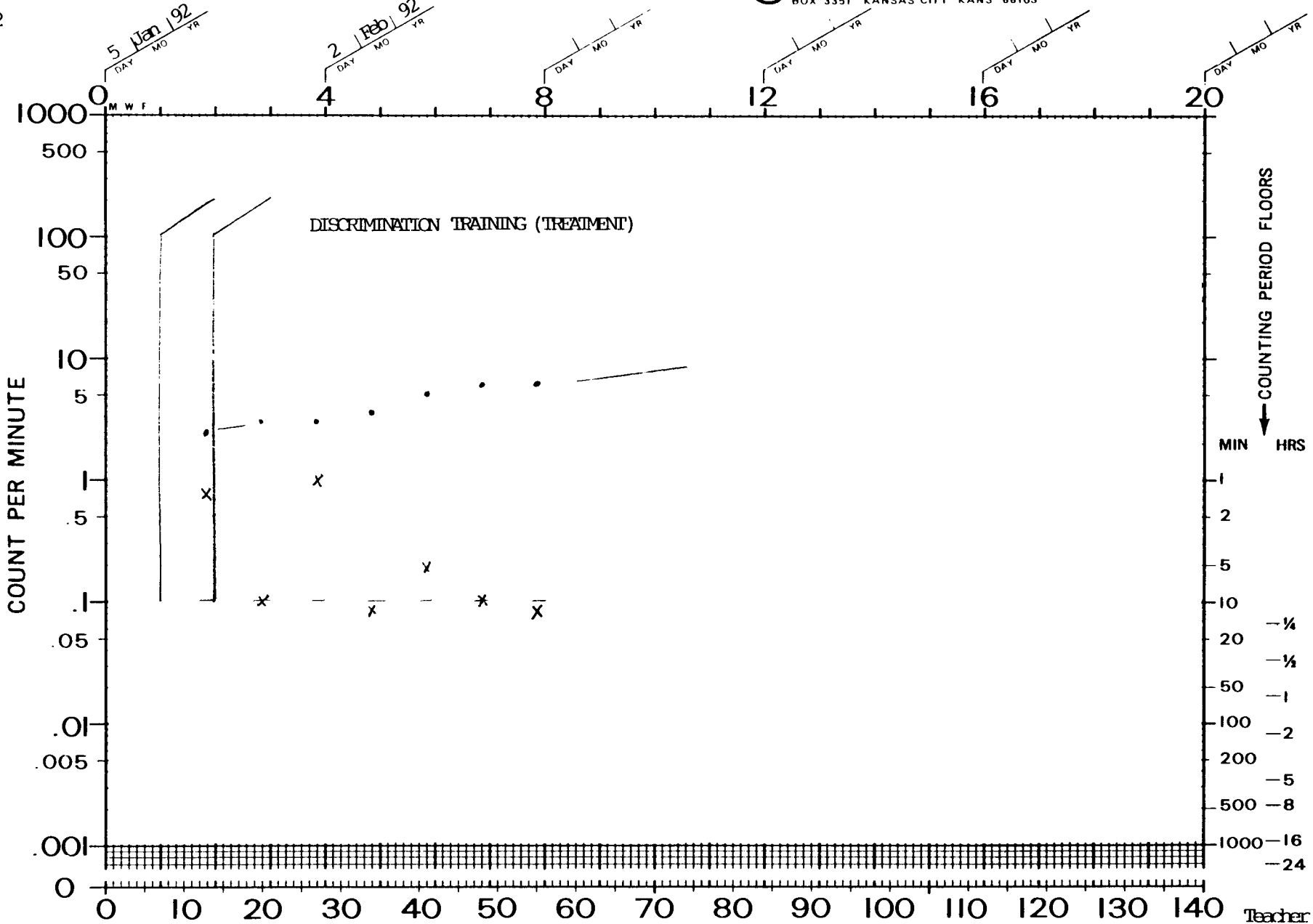
Sweeney			Sweeney			20			Preservice Teacher			Teacher Evaluation Technique		
SUPERVISOR	ADVISER	MANAGER	SUCCESSIVE CALENDAR DAYS			Beh	20	Preservice Teacher	Teacher Evaluation Technique			COUNTED		
Ward	The Ohio State University		Cull/Ward	Drevno	Sweeney	BEHAVIOR	AGE	CABEL						
DEPOSITOR	AGENCY		TIMER	COUNTER	CHARTER									

CHART #2

CALENDAR WEEKS



DAILY BEHAVIOR CHART (DCM-9EN)  
 6 CYCLE - 140 DAYS (20 WKS)  
 BEHAVIOR RESEARCH CO  
 BOX 3351 KANSAS CITY KANS 66103



Sweeney			Sue			19			Teacher		
SUPERVISOR	ADVISER	MANAGER	BEHAVIOR	AGE	LABEL	COUNTED	Teacher	Evaluation	Technique		
Ward	The Ohio State University	Cull/Ward	Sweeney								

indicated a gradual improvement in discriminations and responses as Sue became more accustomed to the intervention. All learning opportunities remained below five with the exception of the outlier that occurred from session 3.

### *Chart 3*

After a one session baseline, Mary's data from Chart 3 revealed a "Take-Off" learning picture similar to that on Charts 1 and 2. The number of correct "Say/No Say" responses per 10 minute counting period "jumped up" immediately after the discrimination training was implemented. Mary's scores for correctly identifying discriminations ranged from 30 to 60 with a median of 50 during the six intervention sessions. The acceleration of correct "Say/No Say" responses per 10 minute counting period was  $\times 1.2$ . The overall bounce in the data during intervention revealed a performance change of  $\times 2.0$ . This performance change indicated gradual improvement in discriminations and responses, as Mary became more accustomed to the intervention. All learning opportunities for Mary remained below five during the intervention.

## **Discussion**

This study demonstrated that preservice teachers can be taught a discrimination program with relative ease and can implement it with high fidelity almost immediately. The frequency with which Bev, Sue, and Mary correctly identified pupil behaviors and responded correctly increased immediately after intervention. This study represents one of the first attempts to use Precision Teaching measurement strategies in preservice physical education. The learning pictures presented in Charts 1 through 3 present behavior frequencies. These frequencies provide an important measure of the effectiveness of this approach to teaching discriminations in teacher education in physical education.

The study also lends support to the validity of conducting a seven week training program designed to improve preservice teacher discrimination of pupil behavior. The teachers in these set-

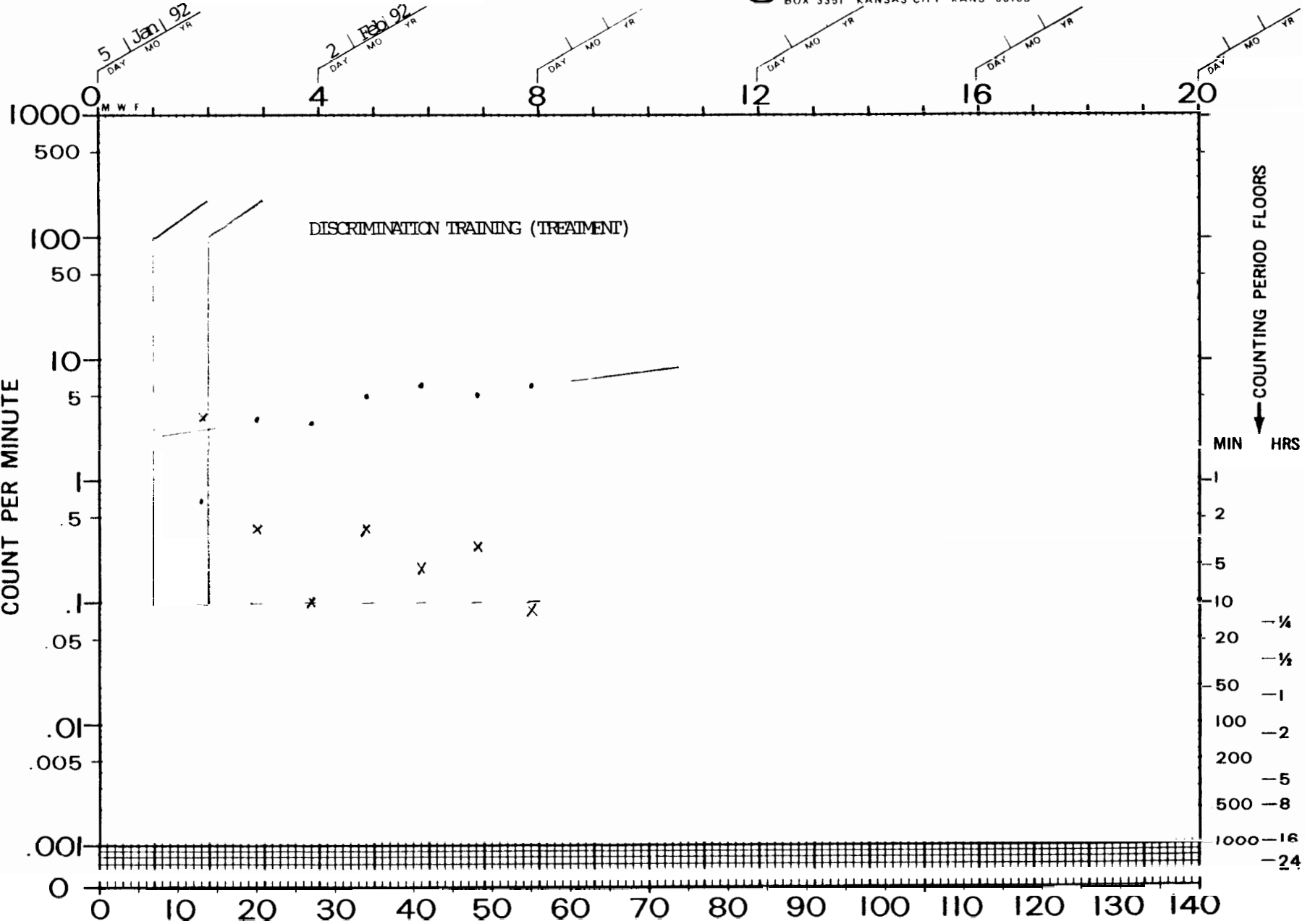
tings are frequently assessed on their ability to produce a rate of "feedback" per minute. Seldom is the accuracy of correct and incorrect discriminations taken into consideration. However, errors in discrimination, while significantly decreased with respect to baseline, were not reduced to zero during this study. All teachers who participated in this study received a passing grade in the class. The criteria for this grade remained the same (i.e., rate of "feedback" per minute) as did for the other teachers in the class.

CHART #3

CALENDAR WEEKS



DAILY BEHAVIOR CHART (DCM-9EN)  
 6 CYCLE - 140 DAYS (20 WKS)  
 BEHAVIOR RESEARCH CO  
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SUPERVISOR	ADVISER	MANAGER	SUCCESSIVE CALENDAR DAYS		BEHAVIOR	AGE	LABEL	Teacher Evaluation Technique
Ward	The Ohio State University	Sweeney	Cull/Ward	Drevno	Mary	20	Preservice Teacher	Counted
DEPOSITOR	AGENCY	TIMER	COUNTER	CHARTER				