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AN EVALUATION OF VARIOUS TACHISTOSCOPIC AND WEFT TECHNIQUES IN AIRCRAFT RECOGNITION

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ABSTRACT

AN EVALUATION OF VARIOUS TACHISTOSCOPIC AND WEFT TECHNIQUES IN AIRCRAFT RECOGNITION

The study evaluated some of the basic assumptions, techniques, and procedures underlying current aircraft recognition training. The effectiveness of the WEFT (analytical) vs. the tachistoscopic approach to training, the relative merits of a successive vs. a simultaneous presentation of stimuli, and the role of image exposure time were investigated. Recommendations for current training and additional research are included.

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FOREWORD

AN EVALUATION OF VARIOUS TACHISTOSCOPIC AND WEFT TECHNIQUES IN AIRCRAFT RECOGNITION

The present study was devoted to an evaluation of some of the basic assumptions, techniques and procedures underlying current aircraft recognition training by specifically addressing itself to the following questions.

1. What is the relative effectiveness of the WEFT approach as compared to tachistoscopic training?

2. How effective is a method which provides for a successive presentation of aircraft as compared to a method which provides for a simultaneous presentation?

3. How is acquisition of recognition skills by means of tachistoscopic presentations related to image exposure time?

4. How effective is a training procedure which employs a multiple choice method of identification during the initial phase of recognition training?

The results clearly showed that:

1. The WEFT system is a highly effective training method and significantly facilitates the acquisition of flash recognition skills.

2. A simultaneous presentation of to-be-learned aircraft is significantly more effective than successive presentations.

3. The course of learning is favored by the use of longer rather than shorter exposures.

4. The initial use of a multiple choice scheme for identifying tachistoscopically presented aircraft significantly improves the acquisition of flash recognition skills.

Recommendations in accordance with these findings and suggestions for future research are provided.

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SECTION I

INTRODUCTION

Aircraft recognition, the ability to recognize and identify airplanes with speed and accuracy, became extremely important during World War II. Its importance was obviously related to the fact that airplanes, which had become key instruments of warfare, also became faster, more maneuverable and more numerous than ever before. As a result, the training of personnel to differentiate between friendly and enemy aircraft became more crucial and more difficult at the same time. To cope with the problem, special training courses were developed.

An early technique was the so-called WEFT system which taught trainees the principal shape features of the aircraft's Wings (W), Engine (E), Fuselage (F) and Tail (T). The method gave a special emphasis to analytical descriptions of WEFT recognition features and was based upon the belief that since different types of airplanes were also differently shaped, recognition could be achieved simply by learning the distinguishing shape characteristics of each. An example of one such description follows.

"In the plan view, the square tips and even taper of leading and trailing edges of the wings are recognition features, but more important is the placement of the wings well aft on the fuselage, giving the aircraft a long-nosed look. The prominent fairing behind the wing roots adds bulk to the center section and pulls the tapered leading edge of the tailplane closer to the wings. In this view again, the wing tanks seem to fix the margins for the whole shape." (NavAER 00-80T-62, 1956, p. 26).

This type of highly-detailed, analytical method, however, is no longer favored as evidenced by statements such as the following in official training documents.

"Early in World War II, someone invented a piecemeal-type recognition process that, for a while, was widely taught. This was the late, lamentable WEFT System, and it is remembered chiefly for the numbers of airplane watchers it confused." (NAVWEPS 00-80Q-51, 1961, pp. 29-30).

Chiefly responsible for the disfavor of the WEFT system was Renshaw, who, drawing heavily upon research findings in the area of tachistoscopic presentation of information, recommended that recognition training employ tachistoscopic or flash presentation techniques. Basically, the method which he proposed involved presenting the aircraft in a brief flash on the screen until the trainee was able to accurately identify it. This recommendation stemmed from Renshaw's belief that short exposures are more effective in developing recognition skills than long ones because brief presentations force the individual to respond to the total form rather than to an aggregate of its component parts. In his own words, "The trained perceiver sees more accurately in short than in long exposures. For the untrained, increasing the exposure time not only does not help but frequently hinders accurate perception." (Renshaw, 1945, pp. 229-230).

Implicit in Renshaw's viewpoint was the conclusion that the WEFT system was ineffective since it encouraged a fractionation of the visually perceived object, thereby creating the possibility that an individual, so trained, would often mistake one plane for another on the basis of responding to only a few of their common characteristics, rather than to the uniqueness of their total form.

Because of the apparent validity of this type of criticism, Renshaw was strongly influential both in firmly establishing the use of flash recognition, and in creating the notion that the WEFT system was essentially obsolete. Nevertheless, in spite of its apparent disfavor, the WEFT technique has not been discarded. Instead, current recognition training manuals (NAVAER 00-80Q-51, 1961) prescribe its use in conjunction with tachistoscopic methods by recommending that the representative training method typically include an initial WEFT-like verbal description of aircraft using slides, followed by a presentation of the to-be-learned planes in brief flashes on the screen. Obviously, the tachistoscopic technique has not replaced the WEFT system, but has simply been appended to it. This seems to imply that in spite of its purported inadequacies from a theoretical standpoint, experience has shown that the WEFT system can contribute to the overall training product.

In trying to account for this apparent inconsistency between theory and practice, it becomes clear that both have evolved in the absence of substantial experimental validation. There has been only one reported study (Luborsky, 1945), in the psychological journals, for example, to evaluate Renshaw's basic assumption that short exposures are more effective than long ones in recognition training. This study found that 20 msec. had no advantages over one-second exposures. It thereby failed to substantiate Renshaw but cannot by itself constitute sufficient evidence against the hypothesis. Similarly, little if any evidence exists regarding the effectiveness of the WEFT system either in comparison to or in conjunction with, tachistoscopic methods. The present study was therefore designed to assess, through experimentation, some of the basic assumptions, techniques, and procedures underlying current aircraft recognition training.

In order to accomplish this end, the investigation addressed itself to a number of very specific questions. These questions along with the rationale for each are presented below.

1. What is the relative effectiveness of the WEFT technique as compared to tachistoscopic methods? This question is primarily directed toward an evaluation of the relative contribution of each technique to the overall training product when they are used jointly.

2. How effective, in terms of acquisition and retention, is a method which provides for a successive presentation of aircraft as compared to one which provides for a simultaneous presentation? This question stems from the observation that the practice in typical training sessions is to present one plane at a time for detailed analysis during the initial phase of training (WEFT phase) without comparing the planes with one another. The practice is apparently due to the belief that comparisons during the WEFT phase are to be avoided because the student may be encouraged to differentiate among the airplanes on the basis of their

SECTION II

METHOD

Subjects. Fifty-six student volunteers, attending undergraduate psychology courses at Hunter College, served as subjects (Ss) in the experiment. Each S was assigned to one of the six experimental conditions. The number of Ss serving under each of the experimental conditions was as follows:

Condition	No. of Subjects
I	9
II	8
III	9
IV	9
V	11
VI	10

Apparatus and Material. The apparatus consisted of a 30-inch by 40-inch beaded projection screen and a Kodak Carousel slide projector used in conjunction with an Ilex. No. 3 Acme tachistoscopic shutter which was calibrated to provide exposures ranging from 14 to 75 msec.[1] Two inch by two inch slides were prepared of the bottom plan view of 12 foreign airplanes. Four of these planes (Badger, Bear, Camp and Clod) were used during a preliminary indoctrination session to familiarize each S with the experimental procedure which was to follow. The remaining eight airplanes (Mangrove, Bounder, Blinder B, Fitter, Fagot, Fishbed C, Fresco and Flashlight A) were the ones utilized during the actual experimental sessions. (For the purpose of this experiment, the practice-session airplanes were designated by the letters A through D while the experimental-session airplanes were designated by the numbers 1 through 8).

Two types of photographic charts were prepared for use during certain practice and experimental trials (Figs. 1 and 2). In addition, two slide trays were employed. One tray contained ten sets of the four practice-session planes, while the other contained ten sets of the eight experimental-session planes. The ten sets of planes in each tray were arranged in successive blocks of eight so that each of the to-be-learned airplanes appeared once within a block. In addition, the order of the planes was randomized from block to block with the slides placed in the trays in a manner which caused the orientation of the image on the screen to vary from trial to trial (up, down, right, left).

[1] Since the nominal shutter speeds are often inaccurate, the calibrated speeds are reported.

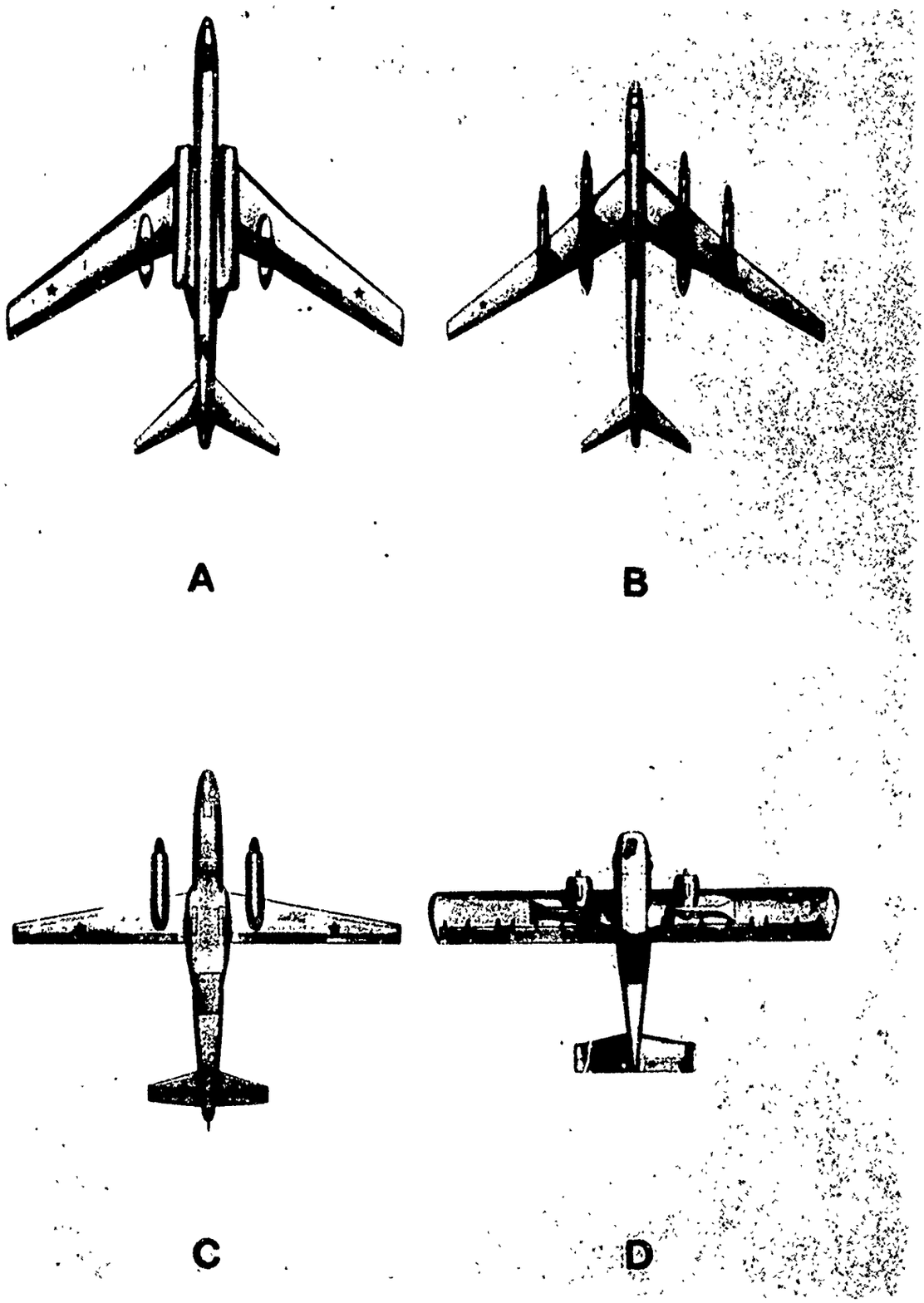

Fig. 1 Reproduction of the Photographic Chart Containing Pictures of the Four Practice-Session Airplanes

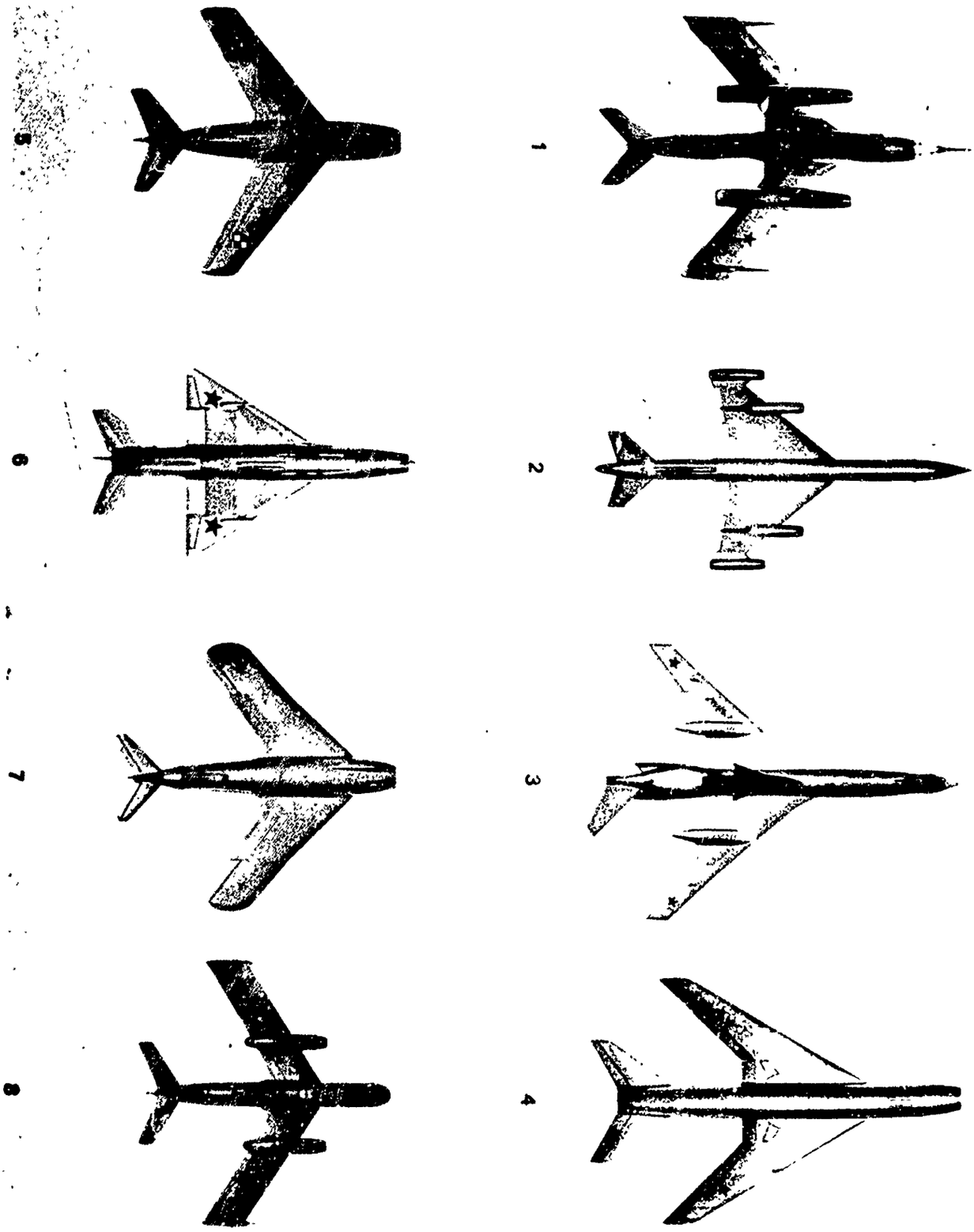

Fig. 2. Reproduction of the Photographic Chart containing Pictures of the Eight Experimental-Session Airplanes

SECTION III

PROCEDURE

To achieve more accurate experimental control, this study was conducted with individual Ss rather than with groups of Ss. Each S was provided with a practice session of the procedure to be followed in the actual experimental session. The practice session was identical in all respects to the experimental session except for the fact that the practice airplanes were used. Since the purpose of the practice session was simply to familiarize the subject with the experimental procedure, the session was terminated when the subject indicated through his performance that he understood the procedure.

The following six experimental conditions were employed.

Condition I (Multiple-Choice). Under this condition each of the airplanes was flashed on the screen by means of the tachistoscopic slide projection system, using exposures of 14 msec. duration. The subject was provided with a photographic chart containing pictures of the airplanes (Fig. 1) and was required to identify each flash by recording the number of the airplane of his choice on a special answer sheet. At the same time, S was required to call his answer out aloud. The experimenter (E) provided S with immediate knowledge of results during the entire experimental session by calling out the correct answer following S's response to each flash. As soon as S was able to identify all of the planes within a block correctly, the photographic chart was withdrawn and S was required to continue to identify the airplanes without this aid. The session continued until S reached criterion, which meant that he was able to identify all of the planes within a block correctly without the aid of the chart.

The total number of trials (blocks) to criterion and total number of errors were recorded.

Condition II (14 msec. Flash). This condition employed procedures very similar to the paired associates method traditionally employed in verbal learning experiments. During the presentation of the first block of planes, each of the eight planes was presented tachistoscopically, employing exposure of 14 msec. duration, with E calling out the number of each plane immediately following the flash. Thereafter, S was required to identify the planes himself by writing the number of his choice on a special answer sheet and by calling it out aloud. As in Condition I, E called out the correct answer immediately following S's response, thereby providing immediate knowledge of results throughout the session. Under this condition, S continued to respond until he was able to correctly identify all of the planes within a block. The number of trials (blocks) to criterion and total number of errors to reach criterion were recorded.

Condition III (WEFT) - Simultaneous). This condition employed a WEFT procedure whereby the subject, provided with the photographic chart that contained the pictures of all eight to-be-learned aircraft (Fig. 2), was instructed to study the chart for exactly 10 minutes. He was further instructed that during the 10-minute study period, he was to pay special attention to the shape of the wings, the number and size of the engines, the shape of the fuselage, the tail, and the appendages of the aircraft, in order to learn to identify each plane accurately. As soon as the WEFT study period was over, the chart was withdrawn and the planes were presented for recognition tachistoscopically in a fashion identical to that of Condition II. As in Condition II, the number of trials to criterion and the total number of errors to criterion were recorded.

Shortly after reaching criterion, short-term retention was measured by testing S on two successive blocks of airplanes. During the presentation of the first block, each plane was exposed and remained on the screen until S indicated his answer. The next slide was presented immediately following the response to the previous slide. The second block of planes was presented tachistoscopically (14 msec. exposures). The total number of correct identifications was recorded. No knowledge of results was provided during the retention tests.

Condition IV (WEFT-Successive). This condition was identical to Condition III except that during the WEFT study period, an individual picture of each plane was studied separately for one and one-quarter minutes until S had successively studied all eight airplanes. In this way, a total study period of 10 minutes was provided, making the duration of the WEFT study period of this condition identical to that of Condition III.

Condition V (75 msec. Flash). This condition was identical to Condition II except that 75 msec. exposures were employed instead of 14 msec.

Condition VI (Prolonged Exposure). This condition was identical to Condition II except for the fact that the airplanes were not presented tachistoscopically. Instead, each plane was projected on the screen and remained there until S gave his answer. The experimenter provided S with the correct answer immediately following S's response and then presented the next slide. The time of each exposure was therefore directly under the control of the individual S and resulted in prolonged exposures of variable duration.

SECTION IV

RESULTS AND DISCUSSIONS

The performance of the experimental groups in terms of means and standard deviations is summarized in Tables 1 and 2. An analysis of these results will be made in four sections to correspond to the four basic questions to which this study was addressed.

1. What is the relative effectiveness of the WEFT approach as compared to tachistoscopic training? To answer this question it is necessary to relate Condition II with Conditions III and IV. A comparison of these three experimental conditions is provided graphically in Fig. 3 which relates the mean number of errors committed within individual blocks of five trials each. The graph indicates that acquisition under Conditions III and IV is accomplished with both fewer errors and trials than under Condition II. Tables 3 and 4 indicate that for both measures of acquisition, significant differences exist between Condition II and III at the .001 level and between Conditions II and IV at the .02 level. A clear superiority is therefore established for the training procedures which incorporate WEFT techniques as compared to techniques that utilize tachistoscopic presentations exclusively.

2. How effective in terms of acquisition and retention is a method which provides for a successive presentation of aircraft as compared to a method which provides for a simultaneous presentation? The results indicate that Condition III, which provided for a simultaneous presentation of the to-be-learned airplanes is superior in both acquisition and short-term retention to Condition IV which provided for the successive presentation of the airplanes. The course of acquisition of both groups (see Fig, 3) makes quite evident that during all stages of learning, Group III committed fewer errors and required fewer trials to criterion than Group IV. Tables 3 and 4 show that the difference in means between the two conditions is statistically significant at the .02 level for both measures of acquisition. Table 5 indicates that the superiority in retention of Group III over Group IV is significant at the .001 level. These results therefore provide evidence of the advantageous effects of simultaneous presentations.

3. How is the acquisition of recognition skills by means of tachistoscopic presentations related to image exposure time? Since Conditions II, V, and VI provided for 14 msec., 75 msec. and prolonged image exposures respectively, a comparison of these conditions in terms of their effect upon acquisition serves as the basis for evaluating the effect of exposure time upon learning to recognize aircraft. Figure 4, showing the course of acquisition of each of the three groups, indicates that they differ distinctly from one another in terms of the number of errors committed and the total number of trials required to reach criterion. It is also quite apparent that there is a strong relationship between exposure time and acquisition (i.e., the shorter the exposure time, the longer the course of acquisition). Variance analyses indicate that the difference among the three groups is significant at the .01 level when compared with respect to the number of trials to criterion (Table 6) and at the .005 level when compared with respect to error scores (Table 7). This finding contradicts Renshaw's original contention that shorter exposure times facilitate the course of acquisition.

4. How effective is a training procedure which employs a multiple-choice method of identification during the initial phase of recognition training? Since Condition I provided for the multiple choice technique while Condition II did not, a comparison of these two conditions can be used to evaluate the effectiveness of this method. By comparing the course of acquisition of these two groups in Figure 3, it is evident that the initial use of the chart by Group I markedly reduces the number of initial errors, producing a superiority of performance which is sustained throughout the entire course of learning. The difference in mean number of trials to criterion between Condition I and II is significant at the .05 level (Table 3) while the difference in the mean number of errors is significant at the .01 level (Table 4).

Table 1

Mean and Standard Deviation of Trials to Criterion Scores for the Six Experimental Conditons

Condition	M	SD
I	20.88	9.33
II	37.00	14.99
III	7.33	4.30
IV	18.33	10.23
V	33.36	13.33
VI	16.90	7.53

Table 2

Mean and Standard Deviation of Error Scores for the Six Experimental Conditions

Condition	M	SD
I	54.00	34.12
II	163.88	77.87
III	14.44	10.68
IV	66.67	17.63
V	118.67	57.34
VI	56.00	30.62

Table 3

t Tests for Comparison of Differences between Mean Trials to Criterion of Conditions I, II, III and IV

Condition	I	II	III	IV
I	-	2.46*	3.73***	0.52
II		-	5.06****	2.78**
III			-	2.80**
IV				-

* $p<.05$
** $p<.02$
*** $p<.01$
**** $p<.001$

Table 4

t Tests for Comparison of Differences between Mean Number of Errors to Criterion of Conditions I, II, III and IV

Condition	I	II	III	IV
I	-	3.42**	2.94*	0.58
II		-	5.03***	2.83*
III			-	2.90*
IV				-

* $p<.02$
** $p<.01$
*** $p<.001$

Table 5

Means, Standard Deviations and t Test for Difference Between Means of Groups III and IV on Test of Retention

Group	Mean	SD	t
III	15.89	0.36	4.26*
IV	12.44	2.27	

* $p > .001$

Table 6

Analysis of Variance of Trials to Criterion for Conditions II, V and VI

Source	df.	MS	F	P
Between groups	2	1091.38	6.57	<.01
Within groups	26	166.13		
Total	28			

Table 7

Analysis of Variance of Number of Errors to Criterion under Conditions II, V and VI

Source	df.	MS	F	P
Between groups	2	26510.27	7.27	<.005
Within groups	24	3644.79		
Total	26			

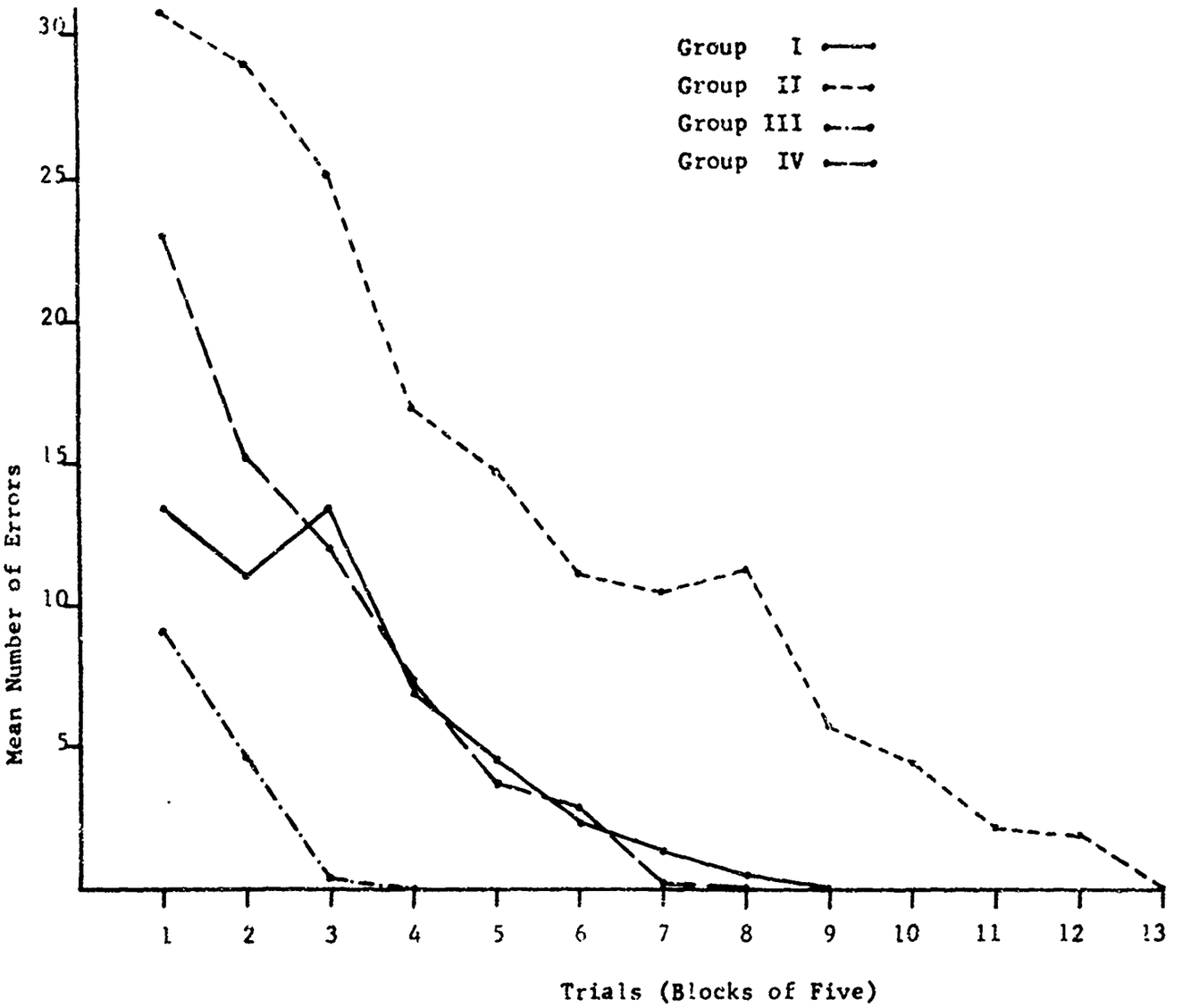

Fig. 3 Course of acquisition for Conditions I, II, III and IV in terms of mean number of errors per blocks of five trials ea

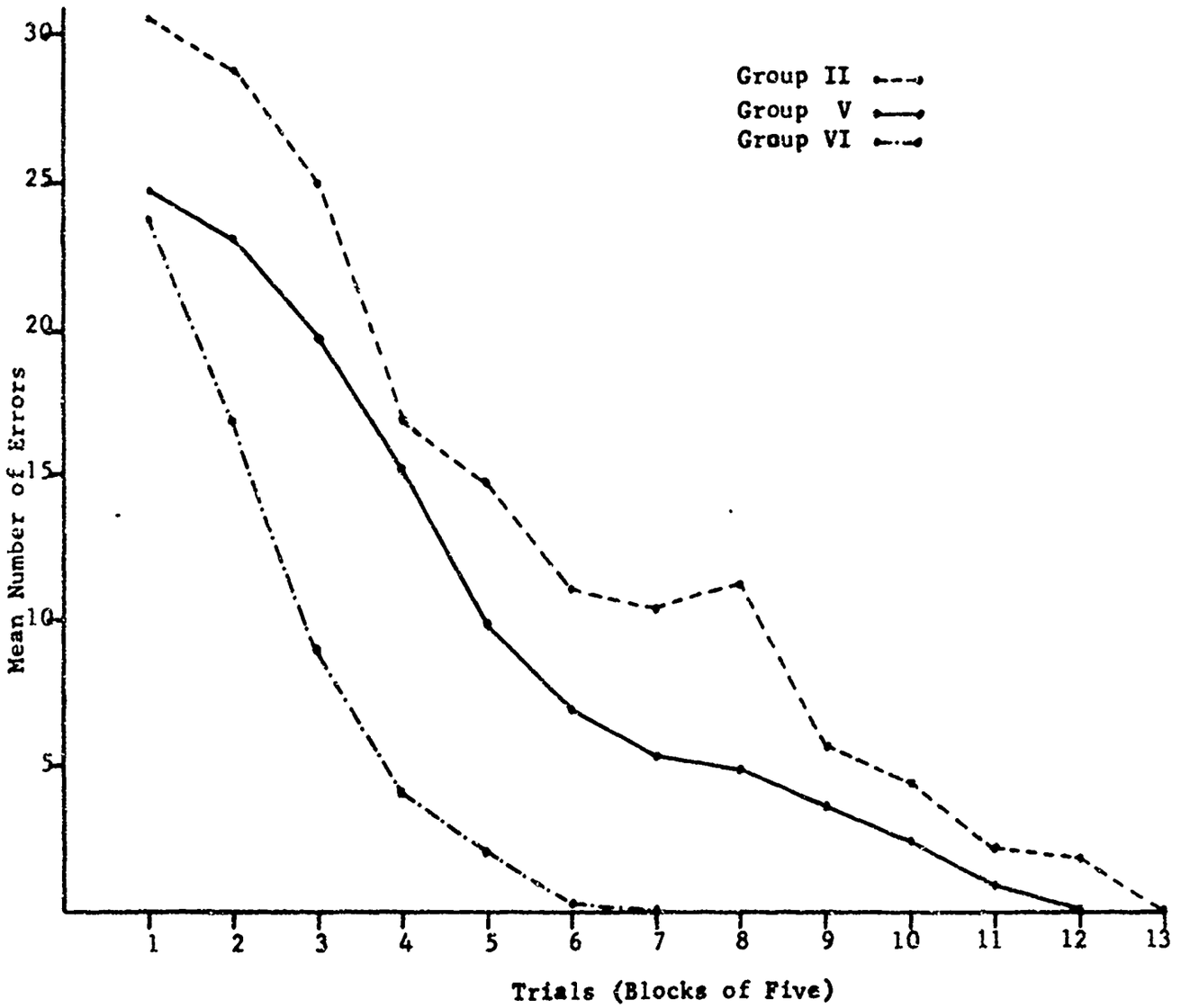

Fig. 4 Course of acquisition for Conditions II, V, and VI in terms of mean number of errors per blocks of five trials each.

each.

SECTION V

CONCLUSIONS

The results of the present study have established that the WEFT system of studying aircraft features for identification of airplanes can be a highly effective training method. That preliminary WEFT training facilitates recognition under conditions of tachistoscopic presentation is evidenced by the performance of Groups III (WEFT-Simultaneous) and IV (WEFT-Successive). Both of these groups acquired flash recognition skills more rapidly and with significantly fewer errors than when training was entirely tachistoscopic in nature. The value of WEFT training procedures as a foundation for flash recognition skills has therefore been established.

In considering the most effective utilization of WEFT procedures, the findings of this study lead to the conclusion that a simultaneous presentation of the to-be-learned aircraft (as in the multiple-choice condition where the WEFT features of each vehicle can be readily compared to all the others) is considerably more effective both in terms of learning and retention than when these features are studied separately for each airplane without the opportunity for a simultaneous comparison. Since the typical operational recognition session usually proceeds with a successive rather than a simultaneous presentation of the new aircraft, this finding has very important implications for improving current training techniques.

The present study has also established the fact that when recognition training employs tachistoscopic techniques exclusively, the initial use of a multiple-choice method (as in Condition I), significantly improves the acquisition of flash recognition skills. A possible explanation for the superiority of this method rests in the essential nature of the initial multiple-choice phase which enables the subject to concentrate exclusively on learning to identify the airplane forms, permitting the name-learning phase to proceed after form recognition has been mastered. As a result, the need to learn forms and names at the same time is eliminated with a consequent reduction on the retarding effects of the competing learning responses and a resultant increase in learning efficiency.

The unequivocal finding that the course of acquisition improves with longer rather than shorter exposures seems to constitute a direct contradiction of Renshaw's original assertion that the opposite is true. This finding in conjunction with Luborsky's (1945) earlier failure to substantiate Renshaw's hypothesis regarding the relationship between acquisition rate and the duration of tachistoscopic exposures indicates that a careful reevaluation of training systems based upon Renshaw's original recommendations would seem to be advisable.

SECTION VI

RECOMMENDATIONS

1. Studying WEFT features during aircraft recognition training has been shown to be highly effective in the acquisition of aircraft recognition skills. Since WEFT learning transferred readily to recognition under tachistoscopic conditions, it is recommended that a significant amount of the overall training time be devoted to the use of this method.

2. When WEFT features are studied, a simultaneous presentation of to-be-learned aircraft leads to significantly faster learning and better retention than when each plane is presented individually. It is therefore recommended that during WEFT training, the airplanes should be presented together and described in relation to one another. An effective training device for this purpose would be an overhead projector that would permit a simultaneous projection of the aircraft under study onto a projection screen. Similarly, a training aid in the form of a photographic chart with all of the airplanes on it (as employed in the present experiment) could accomplish the same purpose. Perhaps the most flexible scheme for providing such simultaneous comparisons would be the use of multiple-slotted photograph holders into which the individual pictures of the to-be-studied aircraft could be inserted.

3. When tachistoscopic techniques are employed for aircraft recognition training, the initial use of a multiple-choice scheme for identifying tachistoscopically presented images from an array of photographs significantly increases the rate of learning. The procedure is therefore recommended as a valuable method for improving training in flash recognition. The training aids suggested in (2) above would also be directly applicable in the implementation of this improved tachistoscopic training method.

4. In view of the significant finding that longer rather than shorter exposures facilitate the acquisition of aircraft recognition, it is recommended that the premature use of very short exposures be avoided during tachistoscopic training.

5. Prior to their operational introduction, a validation of the recommendations of this study should be made under conditions of group administration.

6. An investigation similar to the present one should be undertaken to determine whether aircraft recognition techniques and principles are applicable to the recognition of ships and other object-forms.

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APPENDIX A

INSTRUCTIONS

Examples of the more pertinent instructions given to the subjects of each of the experimental conditions during the practice session are described below.

1. Condition I (Multiple Choice). You are about to participate in an aircraft recognition session. This will involve viewing brief presentations of a number of different airplanes, and trying to pick them out from an array of pictures which you will have in front of you. For example, look at the photographic chart on your desk which has pictures of four different airplanes on it. After each flash, you will be required to indicate which one of these planes you saw, by writing the letter of the plane of your choice in the appropriate space on your answer sheet and by calling it out aloud at the same time. Once you have given your choice, I will call out the correct answer and go on to the next one. In this way you will be able to note the correctness of each of your choices immediately after you have made them.

Before each presentation I will give you a ready signal by saying "ready." When I do this, you are to prepare yourself for the flash by fixating on the screen. The flash will follow very shortly thereafter and, as I mentioned before, you are to identify the plane by placing the letter of your choice in the appropriate space on your answer sheet and by calling it out aloud at the same time. I will then call out the correct answer and proceed to the next presentation. Are there any questions?

(After S correctly identified all of the airplanes within a block, the chart was withdrawn and the following instruction was given.)

Now I am going to take away the chart and you will therefore be required to continue to identify the airplanes without it. The procedure will be identical to the one we just used, except that we will proceed without the chart. Are there any questions?

2. Conditions II (14 msec. Flash) and V (75 msec. Flash). You are about to participate in an aircraft recognition session. This will involve viewing brief presentations of a number of different airplanes and trying to identify them. In order to do so, you will have to learn to identify each plane by its appropriate letter. Of course, the first time the plane appears you will not know its letter, so, during the first presentation, I will flash each plane on the screen and give you its letter. After this, you will be required to call out the letter you think is associated with the plane and, at the same time, write your choice in the appropriate space on your answer sheet. Once you have given your choice, I will call out the correct answer and go on to the next one. In this way, you will be able to note the correctness of each of your choices immediately after you have made them.

Before each presentation, I will give you a ready signal by saying "ready." When I do this, you are to prepare yourself for the flash by fixating on the screen. The flash will follow very shortly thereafter and, as I mentioned before, you are to identify the plane by placing the letter of your choice in the appropriate space on your answer sheet and by calling it out aloud at the same time. I will then call out the correct answer and proceed to the next presentation. Are there any questions?

3. Condition III (WEFT-Simultaneous). You are about to participate in an aircraft recognition session. This will involve studying a number of different airplanes and trying to identify each plane when it is flashed on the screen. The first task in learning to identify these planes will be to study the pictures of the aircraft which are found on the photographic chart in front of you. Notice that each plane has a letter underneath it. Try to identify the plane by associating it with its appropriate letter. Also try to learn its discriminating features. Pay special attention to the shape of the wings, the number and size of the engines, the shape of the fuselage (body), the tail, and any appendages which it may have that will help you to differentiate one from the other. Make sure to spend all of the allotted time in study even if you feel that you can recognize the planes before the time is up. After you have studied the pictures on the chart you will be shown these planes in brief flashes on the screen.

(Immediately after the study period the chart was withdrawn and the following instruction was given.)

Now I will flash pictures of the planes which you studied on the screen. After each flash, you will be required to identify the plane you saw by writing its letter in the appropriate space on your answer sheet and by calling it out aloud at the same time. Before each presentation, I will give you a ready signal by saying "ready." When I do this, you are to prepare yourself for the flash by fixating on the screen. The flash will follow shortly thereafter, and, as I mentioned before, you are to identify the plane by placing the letter of your choice in the appropriate space on your answer sheet and by calling it out aloud at the same time. After you have done so, I will call out the correct answer and then proceed to the next presentation. In this way, you will be able to note the correctness of each of your choices immediately after you have made them. Are there any questions?

4. Condition IV (WEFT-Successive). You are about to participate in an aircraft recognition session. This will involve studying a number of different airplanes and trying to identify each plane when it is flashed on the screen. The first task in learning to identify these planes will be to study pictures of the aircraft. Notice that the picture of the airplane which you have in front of you has a letter underneath it. Try to learn to identify it with its letter. Also try to learn its discriminating features. Pay special attention to the shape of the wings, the number and size of the engines, the shape of the fuselage (body), the tail, and any appendages which it may have that will help you to differentiate one from the other. After you have studied the first

picture for an allotted time period, it will be replaced by the next picture for the same amount of time, and so on until you have seen all of the airplanes. Make sure to spend all of the allotted time in study even if you feel that you can recognize the plane before the time is up. After you have studied all of the pictures, you will be shown these planes in brief flashes on the screen.

(Immediately after the study period, the following instructions were given.)

Now I will flash pictures of the planes which you studied on the screen. After each flash, you will be required to identify the plane you saw by writing its letter in the appropriate space on your answer sheet and by calling it out aloud at the same time. Before each presentation, I will give you a ready signal by saying "ready." When I do this, you are to prepare yourself for the flash by fixating on the screen. The flash will follow shortly thereafter, and, as I mentioned before, you are to identify the plane by placing the letter of your choice in the appropriate space on your answer sheet and by calling it out aloud at the same time. After you have done so, I will call out the correct answer and then proceed to the next presentation. In this way, you will be able to note the correctness of each of your choices immediately after you have made them. Are there any questions?

5. Condition VI (Prolonged Exposure). You are about to participate in an aircraft recognition session. This will involve viewing presentations of a number of different airplanes and trying to identify them. In order to do so, you will have to learn to identify each plane by its appropriate letter. Of course, the first time a plane appears, you will not know its letter, so, during the first presentation, I will project each plane on the screen briefly and give you its letter. After this, you will be required to call out the letter you think is associated with the plane, and, at the same time, write your choice in the appropriate space on your answer sheet. Once you have given your choice, I will call out the correct answer and go on to the next one. In this way, you will be able to note the correctness of each of your choices immediately after you have made them. Are there any questions?

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13. ABSTRACT

This study evaluated some of the basic assumptions, techniques and procedures underlying current aircraft recognition training. The effectiveness of the WEFT (analytical) vs. the tachistoscopic approach to training, the relative merits of a successive vs. a simultaneous presentation of stimuli, and the role of image exposure time were investigated. Recommendations for current training and additional research are included.

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
ACQUISITION AIRCRAFT RECOGNITION TACHISTOSCOPIC PRESENTATION TRAINING WEFT						

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