

## THE EFFECT OF CHANGE OF ACTIVITY IN REPETITIVE WORK

K. P. BHATTACHARYYA, S. CHATTERJI, & MANJULA MUKERJEE  
*Indian Statistical Institute, Calcutta.*

In industrial psychology it has already become an established fact that properly spaced rest-pauses in respective type of work enable efficiency as regards quality as well as quantity of output (1, 3). Wyatt and Fraser (4) found that instead of allowing rest pauses, respective work interspersed with some widely different activity, properly frequented with the original job through organised change periods yields better performance than a continued performance of the repetitive task without any such change of work; the substituted task should, of course, be easier than the task it replaces.

In the present paper we are interested in finding out how the job efficiency is affected when the changed activity, is a bit difficult, requiring greater concentration than the original work.

Thirty-one individuals (21 males and 10 females), homogeneous in age and academic achievement, scored manually with the help of scoring stencils the answersheets of two psychometric tests. The scoring operations were as follows. The scorers placed the scoring stencil on the answersheet by fixing the alignment marks and counted the response marks coming across the punched holes of the scoring stencil and noted it down. Then they counted the blank spaces i.e., the total number of items not answered by a candidate and noted that too. The phase of work just described comprises the repetitive work studied in the present paper.

Now let us describe the substitute work. This is some preliminary task which is to be completed in between scoring two different bunches of answersheets, twenty answersheets were bunched together to form the unit of each work phase.

The experimental design of the present investigation was as follows. Here the subjects were to score the answersheets under two conditions.

### CONDITION I—VARIETY IN WORK

Before commencing the scoring work, i.e., the repetitive task in question, the subjects were required to write down the following information on a specially designed proforma, the name of the centre of examination, the code number of the answersheet bunch, the roll numbers and names of the candidates. This phase of the work can be considered as the substitute work in the experimental design. After finishing this work, the subject started scoring proper and as counting of correct responses and blank spaces of an individual answersheet was over these scores were noted down against the name of the candidate on the proforma. After scoring of a bunch of answersheets was over, the scorer reverted to the substitute task for the next lot of answersheets.

### CONDITION II—UNIFORMITY IN WORK

Under the second condition, the subjects simply scored and wrote down the scores on the answersheet itself. So the task under this condition was continuous and without

any scope of change of activity, while under the first condition the repetitive task of scoring was interspersed with a changed activity, a substitute task, which was a bit strenuous and required more attention in comparison to the repetitive task of scoring where the simple operation of counting was the only task to be performed.

The performance of the scorers under both the conditions were checked and the errors committed by them were also found out.

We will now concentrate our attention on the results obtained

while scoring the first test i.e., the test of general ability. Here the total number of items to be scored was 106. It has already been pointed out that to facilitate scoring the answersheets were bunched together in different lots, each consisting of twenty answer scripts. As the number of lots scored by different scorers varied, the average error (per lot) committed was found out for each scorer. Sandler's A-test (2) was applied to find out the statistical significance of the scoring errors of the two conditions.

TABLE 1, showing Mean, standard deviation and p-values of A-test for scoring errors of Test-I.

	Male (N=21)		Female (N=10)	
	First condition	Second condition	First condition	Second condition
$\bar{x}$	3.55	2.64	4.65	3.31
$\sigma$	1.64	1.74	1.86	1.01
$\Sigma D$	19.02		13.43	
$\Sigma D^2$	71.7401		47.8097	
A	.198		.265	
p	<.05		<.05	

Table-1 reveals that the p-value is significant beyond five per cent level in both the groups, which shows that more errors are committed under the first condition than under the second condition and this difference is significant. So we find that when the repetitive task is interspersed with a substitute task, more difficult in nature, instead of a continuous performance of the repetitive task the work performance deteriorates statistically significantly and no sex discrimination in this matter could be observed.

The second point under consideration was to observe the effect of

the frequency of the change period on the work performance. In order to intersperse the substitute work frequently the same experimental design was followed with the only exception of the test length. Here the total number of items to be checked was 40, two-fifths of the length of the previous one. To make the substitute task constant, twenty answer scripts were bunched together as before with the same work performances of test 1. Scoring was accomplished by the same individuals under the two different conditions cited above. The results of this phase, is presented in table-2.

TABLE 2: showing Mean, standard deviation and p-values of A-test for errors of Test-2.

	Male (N=21)		Female (N=10)	
	First condition	Second condition	First condition	Second condition
$\bar{x}$	1.07-	.88	1.61	1.20
$\sigma$	.67	.74	.76	.60
$\Sigma D$	4.13		4.16	
$\Sigma D^2$	17.3343		3.8050	
A	1.016		.220	
p	>.10		<.05	

The p-value is different in the two groups and the difference between the two conditions is not significant for the males. As the two forms of activity are too frequently changed, the effect of this change is not here obvious. Wyatt (4) states, 'Frequent changes in the form of activity are detrimental to output'. But it has to be considered that in his case the repetitive task was interspersed with an easier substitute work.

In case of females a significant difference is observed ( $p < .05$ ) between the two experimental conditions, i.e., their performance is not at all affected by the frequency of the substitute work. In other words, the variance of the test length has got no effect on their scoring errors. It may be observed in this context

that the females exceed the males in scoring errors in both the tests. The effect of the frequency of the change of work will possibly work out if it is more frequented, i.e., if the female group is asked to score a very short test, say consisting of only twenty to twentyfive items, That would be an interesting investigation but could not be performed for lack of necessary data.

This study suggests that if any task is introduced alternately with some monotonous and repetitive task then the output is hampered qualitatively instead of ironing out the effect of monotony arising out of the repetitive task, when the interspersed task is more difficult and exacting more concentration than the original task.

#### REFERENCES

1. Ghiselli, E. E. and Brown, C. W.—*Personnel and Industrial Psychology*. New York. McGraw Hill. 1948.
2. Sandler, J.—A test of the significance of difference between the means of correlated measures, based on a simplification of Student's *t*. *British Journal of Psychology*, 1955, 46, 225-226.
3. Viteles, M. S.—*Industrial Psychology*. New York, W. W. Norton. 1932
4. Wyatt, S. and Fraser, J. A.—*The Comparative Effect of Variety and Uniformity in Work*. Industrial Fatigue Research Board, London. (Report No. 52). 1928.