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The Cattell 16 P.F. Test as a Prognosticator of Accident Susceptibility

By VIRTUS W. SUHR

THE PROBLEM

As early as 1935, Marbe (5) wrote that it seemed obvious there were certain human deficiencies, such as the range of attention, clumsiness, and absentmindedness which predisposed to accidents and expressed the opinion that to some extent the deficiencies making for accident proneness could be detected by tests, and persons suffering from them could be given special training or excluded in advance from dangerous trades.

Lauer (4) in 1937 observed that the ultimate method of evaluating driving ability will probably be that of identifying patterns of response which may prognosticate accident susceptibility.

In 1949 Tillman and Hobbs (6) found that high and low accident groups among taxi-drivers differed markedly in their personality characteristics. In a later study they found the same differentiation among drivers in the general driving population.

Eight paper-and-pencil tests were used in connection with a study of taxicab drivers by Ghiselli and Brown (3) in 1949. The battery of tests showed a validity of .59 with accident records as the criterion.

Freeman (2) in 1952 found two factors of personality Dominance-Submission and Radicalism-Conservatism to be highly significant in relation to accident involvement of a group of lay drivers.

The present study was made in a effort to determine the relationship between personality traits of commercial drivers as revealed by the Cattell 16 P.F. Test and accident involvement as evidenced by their accident records.

METHOD AND PROCEDURE

The method was essentially that of giving the Cattell 16 P.F. Test to sixty commercial drivers selected according to the following three criteria:

1. Supervisors subjective estimate.
2. Supervisors objective ratings.
3. Accident records from company files.

Standard instructions were given each subject as described by Cattell, Saunders and Stice (1). The instruments, The 16 P.F. Test

—Form A, were scored with the aid of the hand scoring stencils for each of the 16 personality factors.

The subjects were from three major trucking companies, each in a different city, and included thirty-one city drivers and twenty-nine over-the-road drivers.'

RESULTS

A dichotomy was formed against each of the three criteria. The thirty drivers with the highest rating were placed in group A. The remaining thirty drivers were placed in group B.

Analysis of variance was made of the mean scores on each of the 16 factors covered by the test. A t-test with pooled variance revealed that certain significant differences existed between the groups as shown in Tables 1, 2 and 3. Other near-significant differences are shown.

Table 1
Grouping According to Supervisors Subjective Estimate.

Factor	Group	Mean	$M_A - M_B$	t
F	A	6.866		
	B	8.200	-1.334	1.419
M	A	6.166		
	B	8.500	-2.334	2.409*
Q ₃	A	6.033		
	B	5.466	.567	1.363

*Significant to the 5 per cent level.

Table 1 indicates a significant difference between the groups with respect to personality factor M, Bohemianism-Practical Concernedness, with the B group toward the Bohemian pole of the factor. The differences with respect to personality factor F, Dominance-Submission; and Q₃, Will Control-Character Stability, fell just short of significance at the 10 per cent level of confidence.

Table 2
Grouping According to Supervisors Objective Ratings.

Factor	Group	Mean	$M_A - M_B$	t
C	A	10.966		
	B	9.200	1.766	1.678†
M	A	6.666		
	B	8.133	-1.467	1.563
O	A	5.333		
	B	7.066	-1.733	1.557
Q ₃	A	6.100		
	B	5.400	.700	1.699†

†Significant to the 10 per cent level.

The results presented in Table 2 show differences with respect to personality factors C, Emotional Stability-General Neuroticism, and Q_3 , Will Control-Character Stability, significant beyond the 10 per cent level of confidence while factors M, Bohemianism-Practical Concernedness, and 0, Worrying-Suspicious-Trustfulness, approached significance at the 10 per cent level.

Table 3

Factor	Grouping According to Accident Records.			
	Group	Mean	$M_A - M_B$	t
G	A	5.433		
	B	4.233	1.200	1.863†
M	A	6.666		
	B	8.133	-1.467	1.563
Q_3	A	6.033		
	B	5.466	.567	1.363
Q_4	A	4.500		
	B	5.266	-.766	1.462

†Significant to the 10 per cent level.

Table 3 reveals personality factor G, Positive Character-Immature Dependent Character just short of significance at the 5 per cent level of confidence. The other factors, M, Bohemianism-Practical Concernedness; Q_3 , Will Control-Character Stability; Q_4 , Nervous-Tension approached significance at the 10 per cent level.

CONCLUSIONS

It would seem that within the limitations of the number of subjects used the following tentative conclusions may be offered concerning The 16 P.F. Test as a prognosticator of accident susceptibility with commercial drivers.

1. Two of the personality factors, M and Q_3 , consistently show differences between the groups.
2. The test will differentiate as effectively from the supervisors ratings as it will from the accident records.
3. The findings justify further research in this area.

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