



## Type A behaviour with ERCTA-a scale in road traffic accidents

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### Abstract:

Road traffic accidents (RTA) are projected to be the second largest cause of mortality by 2020. Globally 1.2 million deaths occur per year due to RTA and numerous other grievous and minor injuries cause disability and workdays lost. Accidents are a complex phenomenon with multiple causative factors and the present study was conducted to evaluate personal characteristics such as personality type and habits such as consumption of alcohol influencing accidents. **Materials and Methods:** A cross-sectional study was conducted among drivers of vehicles involved in road traffic accidents attending District hospital, Karimnagar over a period of one month. A semi-structured questionnaire was administered by face to face interview and the personality was evaluated using an eight item standardized instrument Escala Retiro de Patr—n de Conducta Tipo A (ERCTA-a). Statistical measures obtained included percentages, proportions, means and standard deviation and tests of significance. **Results:** A total of 61 patients consented and participated in the study. Mean age of the respondents was  $30.15 \pm 7.52$  years. All respondents were males. As per the ERCTA-a scale, 19.7% of the respondents had type A personality. **Discussion:** The first component is highly correlated with ERCTA 6. The second component is highly correlated with ERCTA 2. The third component is highly correlated with ERCTA 1.

**Key words:** ERCT-a; RTA; Type A behaviour pattern

### Introduction

Type A behaviour pattern (TABP) has its origin in Friedman and Rosenman's (1974) description of behaviours made from observations carried out in the 1950s. These authors propose that the TABP implies trait characteristics in the person which, in interaction with certain environmental events, result in certain behaviours. [1]

Among the characteristics included in the TABP are: competitiveness, aggressiveness, irritability, work orientation, worrying about deadlines, urgency, etc. From a physical point of view this manifests itself in general tension, an explosive style of speech, a state of alertness, urgent behavioral style and irritability, among other characteristics [1,2].

India accounts for as high as 6% of the world's RTAs, although it has 1% of the world's vehicles. The RTA rate of 35 per 1,000 vehicles in India is one of the highest in the world and so is the RTA fatality rate of

25.3 per 10,000 vehicles [3]. Accidents due to drunken driving are a major concern in India. The problem is unrecognized and hidden due to lack of good quality research data.

A number of factors contribute to the risk of collision including; vehicle design, speed of operation, road design, road environment, driver skill and/or impairment and driver behaviour. Worldwide motor vehicle collisions lead to death and disability as well as financial costs to both society and the individuals involved.

According to the World Health Organisation, for the general driving population, as the BAC level increases from zero the risk of being involved in a crash starts to rise significantly at a BAC level of 0.04g/100ml. Inexperienced young adults driving with a BAC level of 0.05g/100ml have a 2.5 times higher risk of a crash compared with more experienced drivers [4].

## Materials and Methods

A cross-sectional study was conducted among drivers of vehicles involved in road traffic accidents attending District hospital, Karimnagar over a period of one month. A semi-structured questionnaire was administered via a face to face interview and personality was evaluated using an eight item standardized instrument Escala Retiro de Patr—n de Conducta Tipo A (ERCTA-a) [5].

Type A behaviours include hostility, aggression, impatience and a quick temper. A score of 24 or higher on the ERCTA (Recall Scale of Type A Behaviour) scale was considered indicative of the personality type [6].

Statistical measures obtained included percentages, proportions, means and standard deviation and tests of significance.

### Measures

The measurement instrument used was the ERCTA-a, the “screening” instrument of the TABP. It comprises 8 items with a 5-point response scale. The questions have been translated into telugu and was tested for validity in a pilot study. Reliability test was performed to establish the authenticity of the ERCTA-a.

## Results

**Table 1: Distribution of patients based on TABP and age**

ERCTA score	Mean age	N	Std. Deviation
<24	29.73	49	6.614
>=24	31.83	12	10.650
Total	30.15	61	7.516

A total 61 patients consented and participated in the study. Mean age of the respondents was  $30.15 \pm 7.52$  years. All respondents were male. As per the ERCTA-A scale 12(19.67%) of the respondents were of type A personality (Table 1). Mean age between 2 ERCTA scores were found to be statistically not significant ( $P>0.05$ ).

**Table 2: Total Variance Explained**

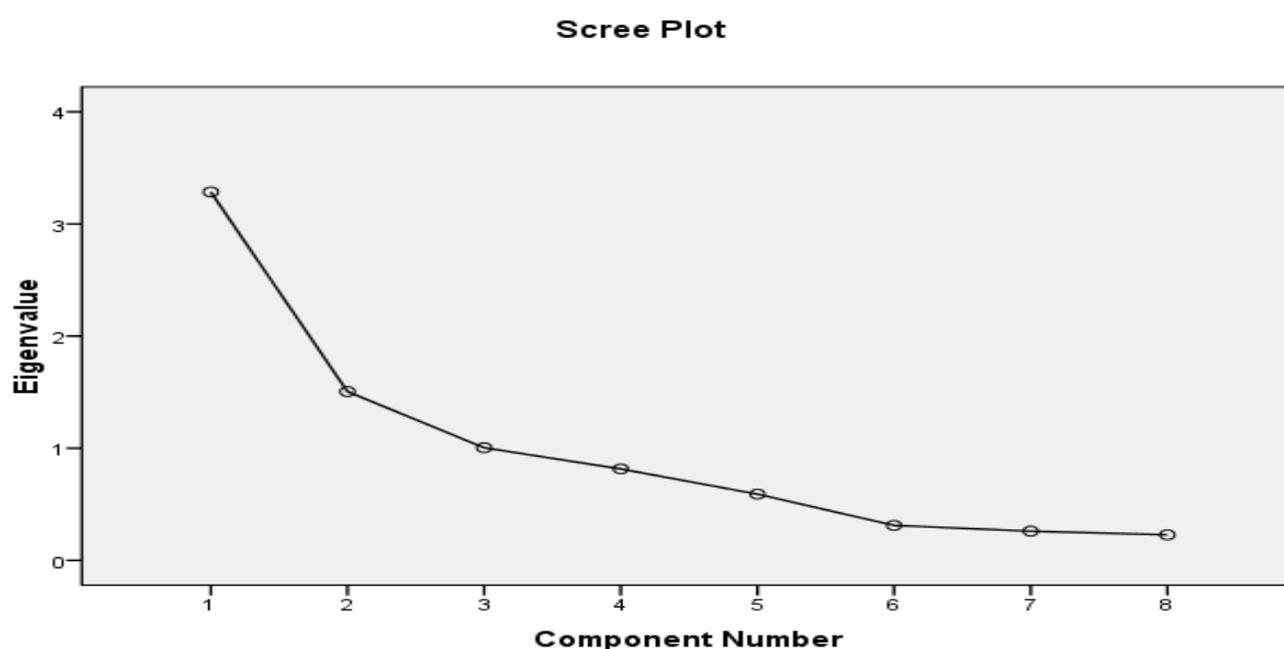
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.286	41.071	41.071	3.286	41.071	41.071	2.240	27.997	27.997
2	1.505	18.811	59.882	1.505	18.811	59.882	2.154	26.922	54.918
3	1.005	12.559	72.441	1.005	12.559	72.441	1.402	17.523	72.441
4	.815	10.192	82.633						
5	.590	7.376	90.010						
6	.311	3.893	93.903						
7	.260	3.250	97.152						
8	.228	2.848	100.000						

Extraction Method: Principal Component Analysis.

### Factorial analysis

The construct validity of the scales was established by factor analysis with varimax rotation, using the SPSS program FACTOR. With the ERCTA-a applied to 61 subjects, we obtained, in a first analysis, 3 factors, following Kaiser's criterion of eigenvalues greater than 1 were identified and were extracted for further research namely experience of stress, activity level and perfectionism. The cumulative frequency of all the factors comes to 72.4%. The "% of variance" column tells us how much of the total variability (in all of the variables together) can be accounted for by each of these summary scales or factors. Factor 1 accounts for 27.997% of the variability in all 8 variables, Factor 2 accounts for 54.918% of the variability in all 8 variables and Factor 3 accounts for 72.441% of the variability in all 8 variables.

**Figure 1: Scree plot**



The scree plot helps us to determine the optimal number of components. The eigenvalue of each component in the initial solution is plotted. Experience of stress, activity level and perfectionism show that eigenvalues are  $>1$ .

From the component matrix table, we observed that the most of the test score loads on to the first factor (except for numbers 1, 2 and 4). Similarly, 2,4,7,8 for the second factor loads, while the third factor accounts for number 1 and 5 only. The purpose of rotating the factors is to get the variables to load either very high or very low on each factor (Table 3).

It is noteworthy, nevertheless, that the highest correlation occurs for Factor 3. This seems to suggest that it is this factor and the items making it up, that best represents the characteristics of the TABP, so that this pattern should be understood, above all, as a negative feature of self-induced work stress (Table 4).

**Table 3: Rotated Component Matrix**

	Component		
	1	2	3
<b>Experience of stress</b>	.083	.084	.945
<b>Activity level</b>	.050	.888	-.201
<b>Perfectionism</b>	.685	.061	-.158
<b>Desire for maximum professional and/or social success</b>	.033	.849	.293
<b>Level of competitiveness</b>	.734	.000	.522
<b>Sensation of urgency/lack of time</b>	.799	.130	.226
<b>Preoccupation with work</b>	.491	.536	.087
<b>Difficulty to communicate emotions</b>	.585	.573	.162

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 5 iterations.

**Table 4: Correlations of ERCTA-a and factors**

Correlations				
		ERCTA_1	ERCTA_2	ERCTA_3
ERCTA_1	Pearson Correlation	1	-.094	.065
	Sig. (2-tailed)		.472	.617
	N	61	61	61
ERCTA_2	Pearson Correlation	-.094	1	.056
	Sig. (2-tailed)	.472		.669
	N	61	61	61
ERCTA_3	Pearson Correlation	.065	.056	1
	Sig. (2-tailed)	.617	.669	
	N	61	61	61

### Discussion:

Very few studies were done on TABP among patients admitted with RTA by using ERCTA-a scale. Intra class correlation for the ERCTA-a scores was found to be 0.743 which considered as 'good' reliability of the scale in the present study. The results of the factorial matrix suggest that there are

three main variables relevant to the TABP, which we have called: work tension or work stress, perfectionism and activity level. As it has been seen, the relationship with this scale is especially obvious in Factor 1 and 2. This leads us to think that the

TABP, as an indicator of RTA, is impregnated chiefly by stress, perfectionism and activity level.

Item 8, which in previous studies appeared isolated, saturates positively in Factor 1, 2 and 3 suggesting that those subjects that experience stress, are those that also have greater difficulty in expressing their emotions.

A study done by Finns Venalainen and Salonen (1992), showed that Type A subjects usually have a more narcissistic, exploitative and distant personality than other people [7]. One of the general conclusions we can draw is that it is necessary to separate the components of the TABP in order to make a more precise prediction of RTA in the studied population [8].

### Conclusion:

Highest correlations occur for Factor 3. This seems to suggest that it is this factor, and the items making it up, that best represents the characteristics of the TABP.

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